Successful Methods

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A Monthly Pictorial of Field Practice and Equipment

GENERAL CONSTRUCTION — HIGHWAYS — BUILDINGS
ENGINEERING — INDUSTRIAL

WILLIAM JABINE
Editor

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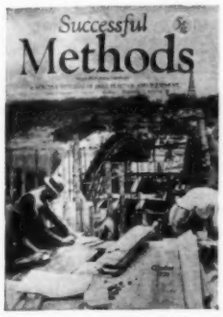
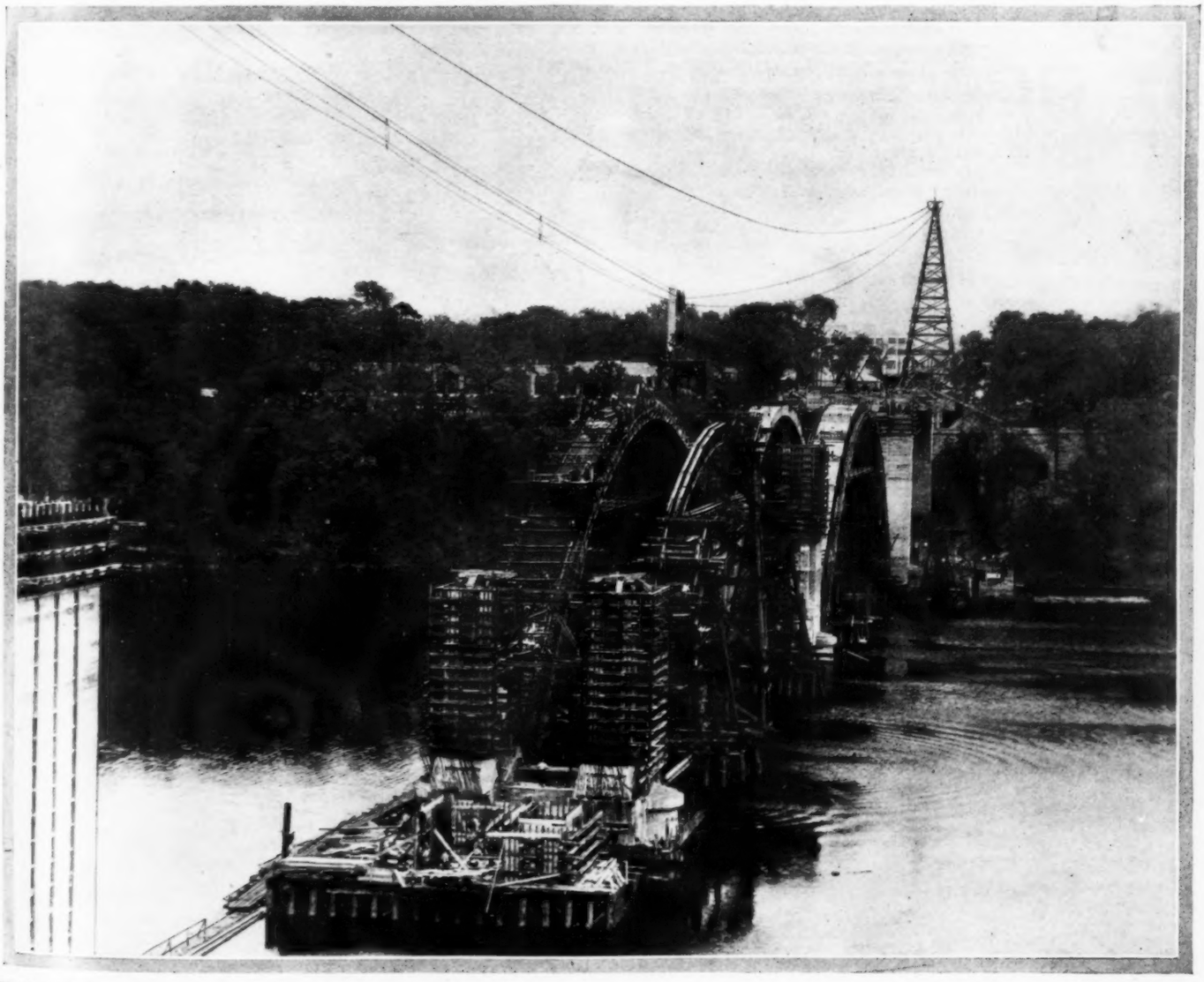


Twin Cities Build New Bridge

ONE of the new concrete bridges under construction in the Twin Cities, St. Paul and Minneapolis, provides both the cover photograph for this issue of *Successful Methods* and the photograph at the bottom of this page.

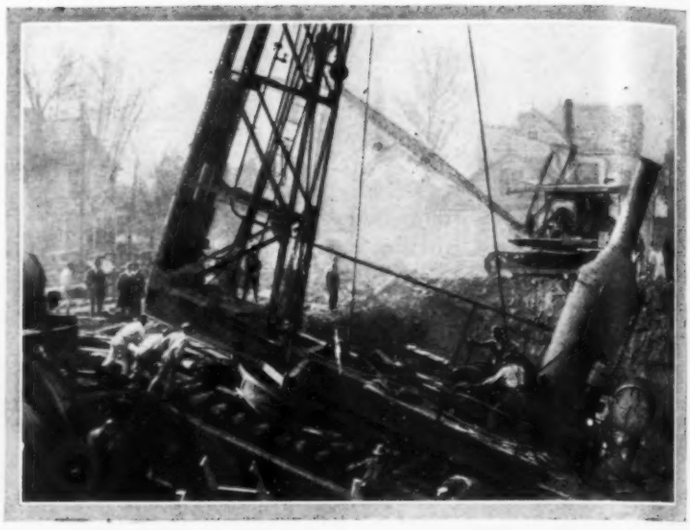
This bridge, officially called the Inter-City Bridge, but popularly known in the Twin Cities as the Ford Bridge, will cross the Mississippi River and will connect Ford Avenue, St. Paul, and Forty-Sixth Avenue, Minneapolis. There will be five concrete arches of the rib type, three each with a span of 300 ft. and two with 139-ft. spans. The roadway will be 100 ft. above the water and the bridge will be 1516 ft. between abutments.

This structure is being built by James O. Heyworth, Inc., of Chicago. It will be open for traffic next spring.



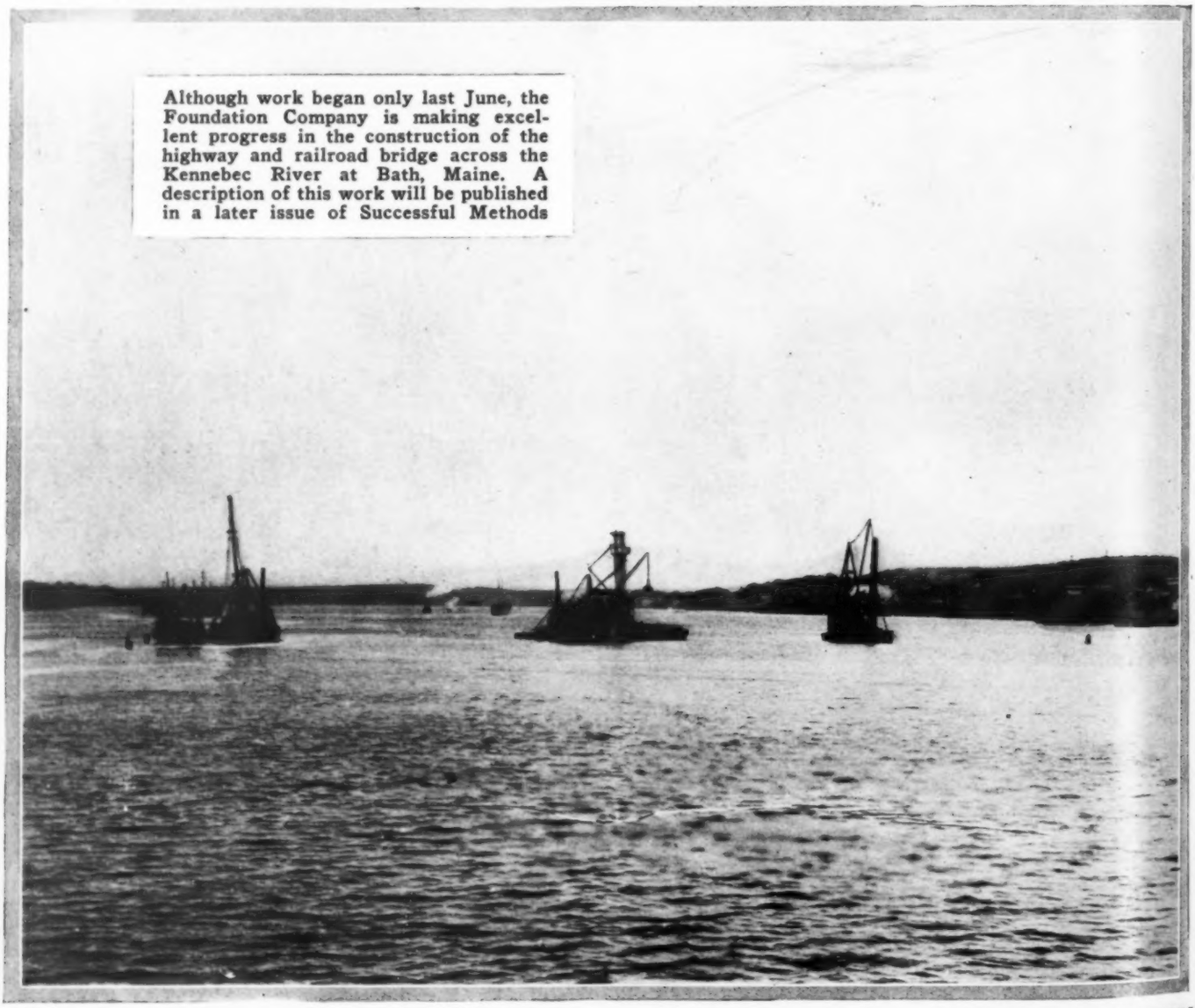
With the Workers

At left—The new buildings of the Columbia University Presbyterian Hospital Medical Center now dominate New York's uptown skyline

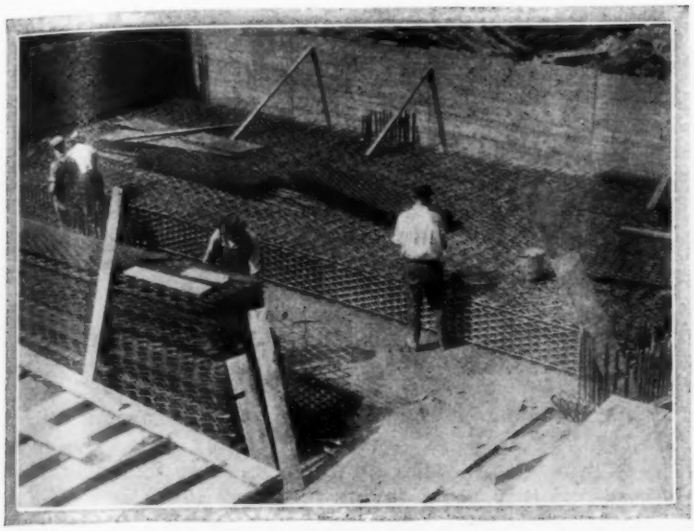


Above—Moving the construction plant is always a problem. This pile driver is arriving on a job in Houston, Texas

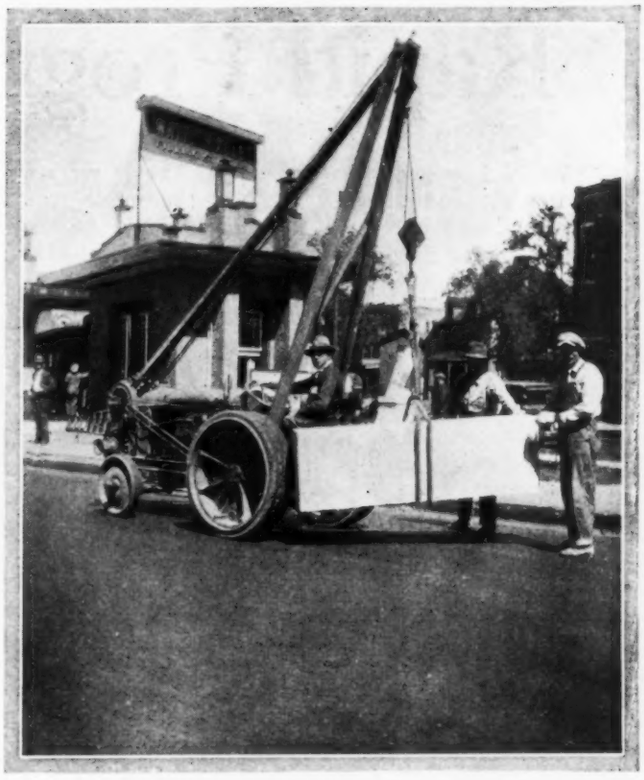
Although work began only last June, the Foundation Company is making excellent progress in the construction of the highway and railroad bridge across the Kennebec River at Bath, Maine. A description of this work will be published in a later issue of Successful Methods



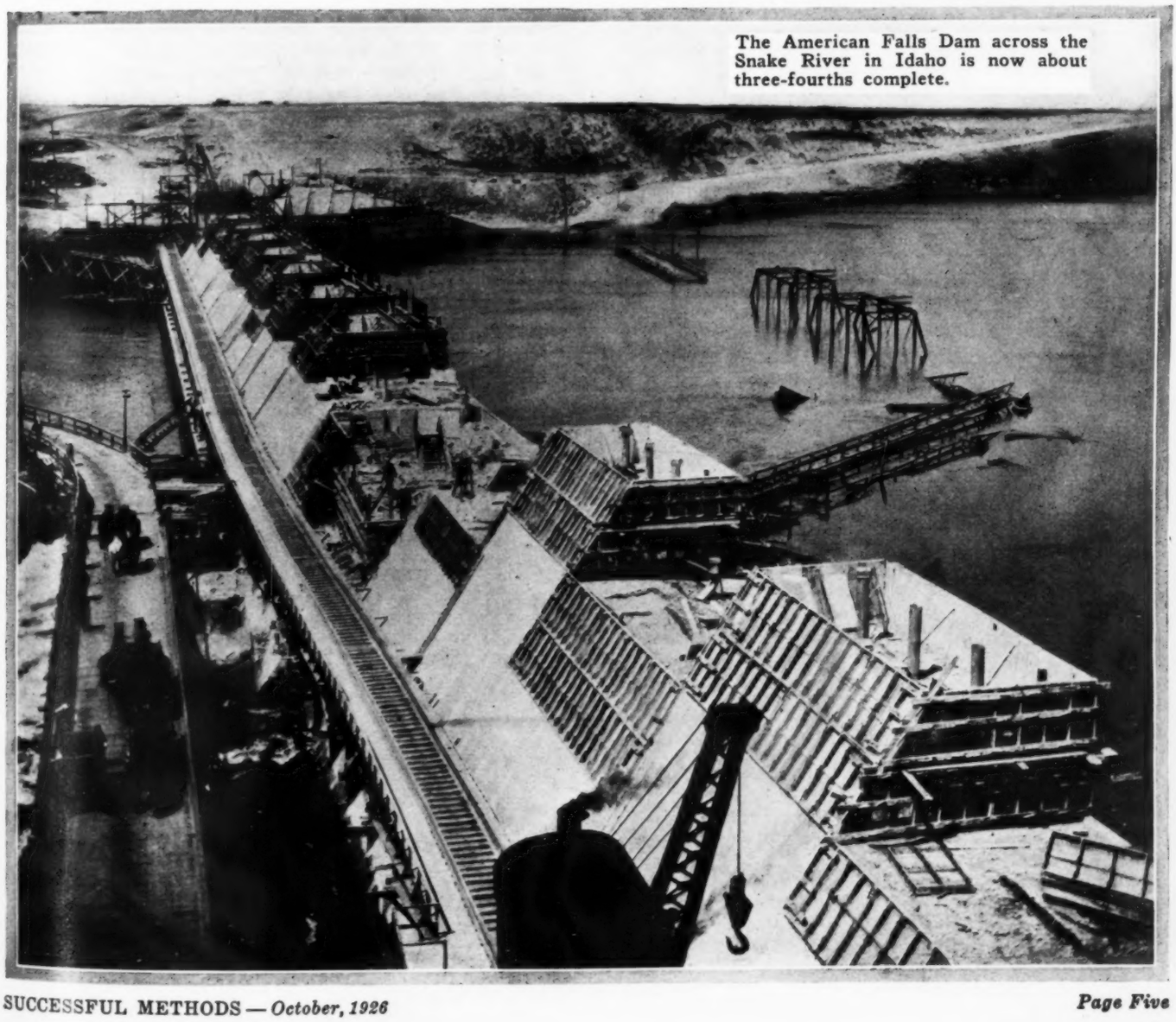
in the U. S. Sector



Above—Building a bank involves considerable special work. This photograph shows the steel armor for a Chattanooga bank



At right—O. S. McCormick, the contractor on the Minneapolis Municipal Auditorium, put together this machine in order to handle the stone



The American Falls Dam across the Snake River in Idaho is now about three-fourths complete.

Rapid Progress on Road Job

Smoothly Working Organization Responsible for Splendid Record in Laying Concrete

EVERY now and then some man, who is working off in a corner by himself far from the public gaze, surprises said public by his record of accomplishment. Away off in the northeastern corner of the United States a road contractor at present is laying concrete at a remarkable rate of speed. Carlo Bianchi of Framingham, Mass., is constructing 4.67 miles of concrete road for the Maine Highway Commission between Ellsworth and Mt. Desert Island. The concrete is being laid in two 10-ft. strips making the final width of the roadway 20 ft. The specifications call for a slab 9 in. thick at the edges and 7 in. in the middle. The base consists of the old gravel road supplemented by new gravel. The underlying soil is clay.

Work began on the job the latter part of June, and during the first month the entire distance was graded and overlaid with new gravel brought from a bank several miles away. The first concrete was laid on July 31st, and since that time the Bianchi organization has averaged about 1,150 lin.ft. of 10-ft. road per working day. The mixer first was sent through for three miles on one side of the road and then began laying the other 10-ft. strip, leaving the last mile until later, because of the fact that culverts had to be constructed.

The entire job calls for 11,100 yd. of concrete, and during the month of August 6,000 yd. of concrete were laid. The same average has been kept up through September. The best work was done the third week of August. On August 21st the big Ransome paver laid 1,400 ft. of concrete. On August 23rd the mark was pushed to 1,480 ft. and on August 26th the best record of all was made—1,520 ft.

An unusual factor that has helped speed up the work is referred to on page 1 of this issue of *Successful Methods.* Arrangements were made to cover the newly laid concrete with burlap as part of the curing process, but the frequent fogs which drift from the Atlantic only a dozen miles away have made it unnecessary to use the burlap on a good share

At left — H. N. Skolfield and Big John Brovelli talking over the work.

Below — This paver and finisher are averaging 1,150 ft. of 10-ft. concrete a day.

in Maine

of the road. Peter Bianchi, son of Carlo Bianchi, who is acting as superintendent of the job, and H. N. Skolfield, the engineer in charge for the Maine Highway Commission, held a conference when the first fog arrived on the scene and decided that it would supply all the moisture that the road needed. Since that time, the appearance of a fog has been the signal for dispensing with the burlap cover.

Although the fog may have helped on a minor detail of the work, the speed with which the concrete has been laid has been maintained in the face of conditions that at first would seem to make such a record all but impossible. The nearest available and sufficient supply of gravel suitable for concrete is about three miles away from the job. About 12 Mack trucks are used to supply the mixer. These trucks in making the circuit from the gravel pit to the job and back to the pit cover a distance of between 7 and 8 miles. Not only is the trip a long one, but about 90 per cent of it is made over country roads. Before work began, the contractor went over these roads with a grader and ironed out many of the rough spots. Despite this work, the going still is pretty hard. The gravel pit provides a splendid

At right—The crushing plant in action. Material brought from the gravel pit is dumped into the crusher through the chute at the left. A truck loaded with aggregates may be seen at the right starting on its long trip to the paver

Below—The three permanent inhabitants of the gravel pit are shown in this picture. They are: an Erie shovel, a Mack truck and the faithful water wagon. This photograph also gives a good idea of the excellent supply of gravel available

Below—The reinforcing bars are set up and properly interlaced with the aid of a wooden frame shown in this photograph. The men who do this work always keep a few hundred yards ahead of the paver

Above—After the finishing machine has been over the concrete, the final touch is applied with a broom. This operation produces a slightly rough surface. H. N. Skolfield, engineer for the State Highway Commission, may be seen watching the work

supply of aggregates and the extent of the deposit may be seen in the lower photograph at the bottom of page 7.

A well-equipped crushing plant has been set up at the pit. The gravel is dug by an Erie shovel, and a Mack truck is kept busy all the time running between the shovel and the crusher, a distance of only 300 ft. This truck dumps the materials directly into the crusher which is set at a lower level than the floor of the pit. As the stone is passed through, it is elevated to the screens and material bins. These bins are equipped with batch hoppers, and the trucks which carry the aggregates to the mixer back in under them. A truck which has just finished loading is shown in the picture of the crushing plant on page 7.

Two cement houses have been built, both fairly close to the job. The trucks stop at whichever cement house is in use on their way from the gravel pit.

As may be judged from the records, the cement gang, which is under the direction of Big John Brovelli, is a very smooth working organization. The main units of the equipment are the Ransome paver and an Ord finishing machine. In laying the second strip, both paver and finisher are using the completed edge of the first strip as a rail, a steel form being used only on the outside edge of the second strip. Steel reinforcing and expansion joints are required by the specifications. The reinforcing bars are handled ahead of the paver by three men who set up the bars in a wooden frame and then leave them on the shoulder of the road. These bars, already properly interlaced, may be seen in the large photograph at the bottom of page 6 at the side of

At the junction with Route 1, Lumnite cement was used in order to hasten the curing process and keep the road open to traffic

the road between the paver and the finishing machine. One of the photographs on page 8 shows the work of setting up the bars. The expansion joints are carried on the operator's platform of the paver so that they are instantly available whenever needed.

In addition to the machine finish, the fresh concrete also is broomed by hand so that the finished job presents a surface which affords better traction than is the case with absolutely smooth concrete. As the road is built through hilly country where grades are considerable, this finish fully justified the additional expense.

Half of the road is being kept open for one-way traffic during the construction period, but traffic moving in the opposite direction is detoured. In order to interfere with traffic as little as possible the section of the new pavement nearest the city of Ellsworth was laid first because at a point about half a mile outside this city, state highway No. 1, the main route to the east, branches off. At the point where route No. 1 leaves the new road, Lumnite cement was used in laying two sections of concrete.

The construction of the shoulders is being left until the pavement is all laid as it will be possible to do that work at a time when it will be no longer possible to lay concrete. Frost comes early in Maine and every effort is being made to get the pavement finished before the cold weather sets in. If the present schedule is adhered to there will be no difficulty in beating the frost. By the end of the first half of September, with the aid of some overtime work, all but about 10,500 ft. of 10-ft. pavement had been laid. All of one strip and more than half of the other was finished.

At the right—This Erie shovel had to work in close quarters preliminary to the reconstruction of one of the old bridges.

Below—Truck stopping at the cement house on its way to the paver.

Below — This photograph gives a good idea of the finished road and also shows the character of the country through which it is being built. At this point both 10-ft. strips of concrete had been laid.

Would You Like to Win $25.00?

IF SO, get out your camera and enter the November photographic contest. *Successful Methods* is offering its fourth $25.00 prize for the photograph most suitable to its needs taken by a man actually employed on the job shown in the photograph. Photographs should be accompanied by a brief description of the job, giving location, name of contractor, name of owner, size of job, when begun, when finished, etc. And don't forget your own name, your address and the nature of your work. THE EDITOR of *Successful Methods* will act as judge and will determine which photograph is best suited to the needs of this magazine.

ALL PHOTOGRAPHS should be sent to *Successful Methods,* McGraw-Hill Publishing Company, Tenth Avenue at 36th Street, New York City, and plainly marked "Photographic Contest." ANY PICTURE that is to be considered in awarding the $25.00 prize for the November issue of *Successful Methods* must be in this office not later than Monday, October 11th. Those arriving after that date will be considered as entered in the December contest. All contest photographs, other than the prize winning photograph, which are used in *Successful Methods,* will be paid for at the rate of $1.00 each. Please don't send photographs of jobs that are now ancient history.

Asheville Breaks Its Bonds

Mountain City Cuts Down Hills and Fills Valleys to Make Room for Growth

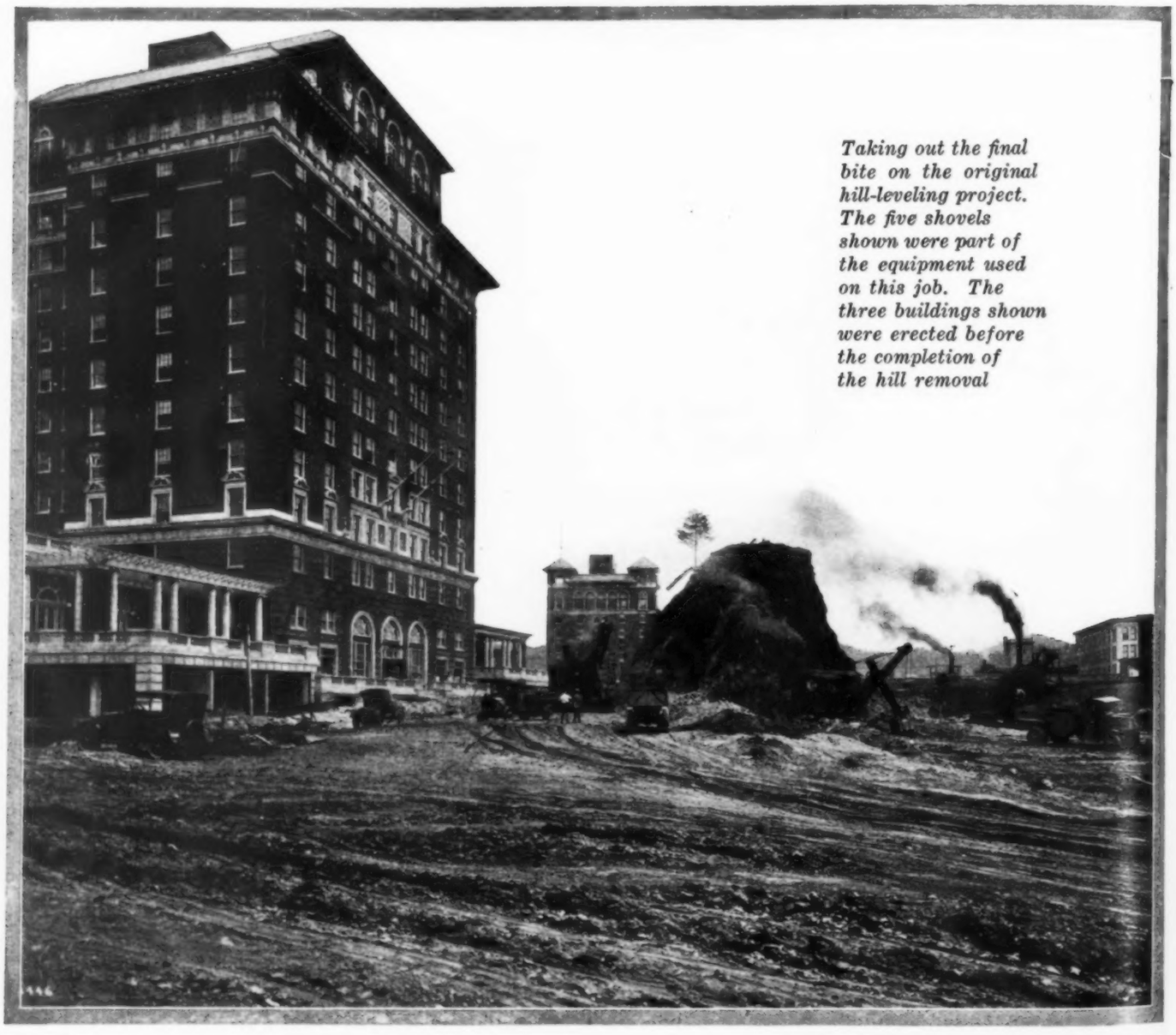
SEVERAL bold dirt-moving jobs lately have been carried out as a means of breaking the bond of hills and valleys that throttled the growth of the business section of Asheville, North Carolina. Located ideally as the center of a vast resort district in the mountains of the western part of that state, the city is on a hilly site that presented many problems. In platting the original town, apparently little thought was given to the future. There seemed to be no possibility then that the straggling little mountain town would some day become a considerable city.

The streets in what has become the central business district were made narrow and entirely inadequate for modern traffic. The surrounding hills and valleys appeared, however, to offer impracticable barriers to expansion. These conditions concentrated the business center in a very small area. This resulted in an intolerable density of traffic.

Much of this handicap has been overcome in the last three years by cutting down the hills to fill the adjacent valleys. This method of providing additional areas on which to expand the business district has proved exceptionally profitable to the private interests which undertook the various projects that have been completed. In fact, two such grading projects at considerable distance from the business district are now in progress to provide satisfactory locations for industrial and warehousing plants.

The first work of this sort was the cutting down of what is known locally as Battery Park Hill. A famous old hotel and various other buildings on that hill were razed. The total area involved was something over 40 acres and more than 1,200,000 cubic yards of materials had to be moved on this first project.

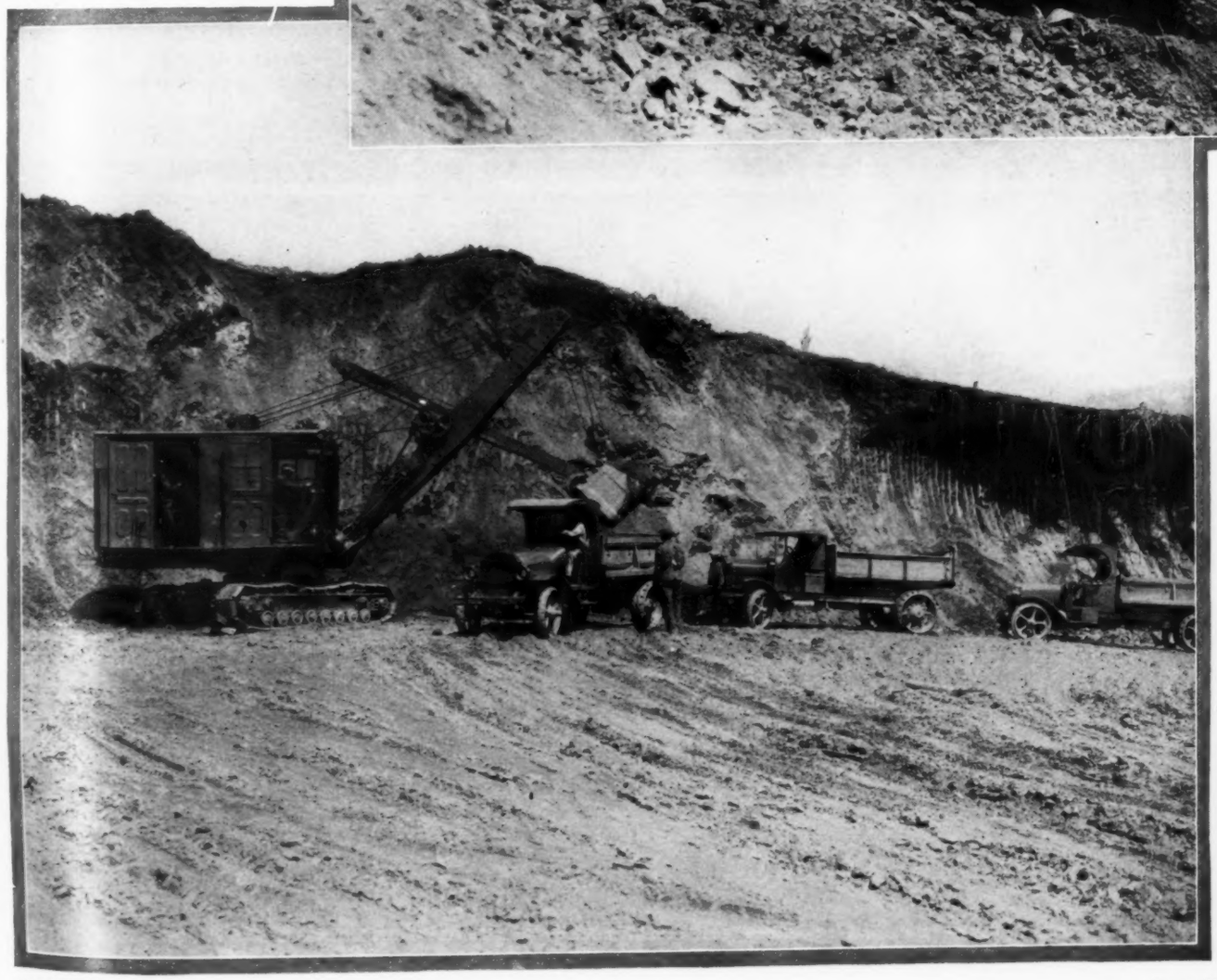
Conditions are such that it was impracticable to employ



Taking out the final bite on the original hill-leveling project. The five shovels shown were part of the equipment used on this job. The three buildings shown were erected before the completion of the hill removal

At the right—
Opening the entrance to one of the new industrial and warehousing districts. The building going up at the extreme left beyond the cut and the one in the center of the background are typical of the structures erected in these newly created districts

Below—
A typical view showing the character of most of the material that has been moved. Practically none had to be shot, but all of it was good hard digging



the hydraulic method used so successfully in regrading operations in Seattle, Washington, and Portland, Oregon. Light, full-circle-swing power shovels loaded the materials into dump-body motor trucks which hauled to the fills made in leveling up the nearby valleys.

It is noteworthy that even on the first job there were none of the old-type double-truck railroad shovels so common a few years ago on dirt-moving jobs of this magnitude. Nor was the dump wagon to be seen. There was one job where cars and track were employed to advantage. In this case the cut averaged around 30 ft. and the valley to be filled was so situated that part of it could be levelled from a trestle, and the balance by side-dumping from shifting track.

Another noticeable feature of the regrading as a whole has been that the gasoline-engine power shovel, unseen on the first job, has lately dominated the situation. Five-ton dump trucks also seem to work out to the best advantage under the conditions. These have been operated over the new cuts and fills in a manner that certainly has proved that the truck can more than hold its own on most dirt-moving jobs.

An accurate estimate of the total amount of material that has been moved on the several regrading and development projects is not available. Local contractors estimate that it exceeds 3,000,000 cu.yd., with much still under way and more contemplated.

The tall building in one of the pictures is a modern hotel that replaced the old Battery Park. Several other hotel, department store and office buildings have been erected on the sites provided by the first project. Another area recently levelled has become the automobile sales and service center of the city. The new industrial sites provided by regrading in other sections of the city are building up rapidly. Thus, this southern resort center has shown a spirit for overcoming what seemed impracticable handicaps in a way that has proved both profitable and effective.

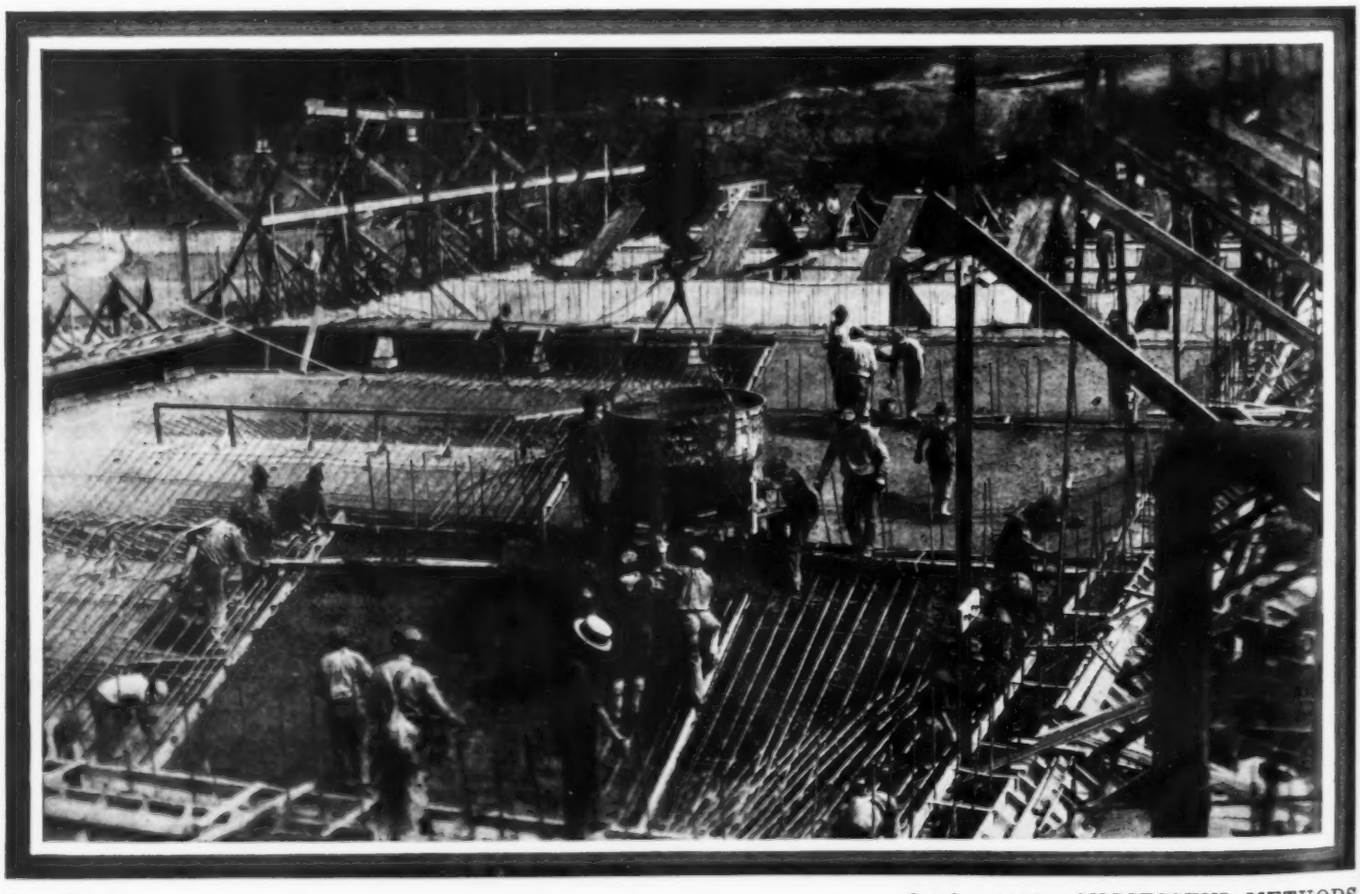
This Picture Wins the Prize

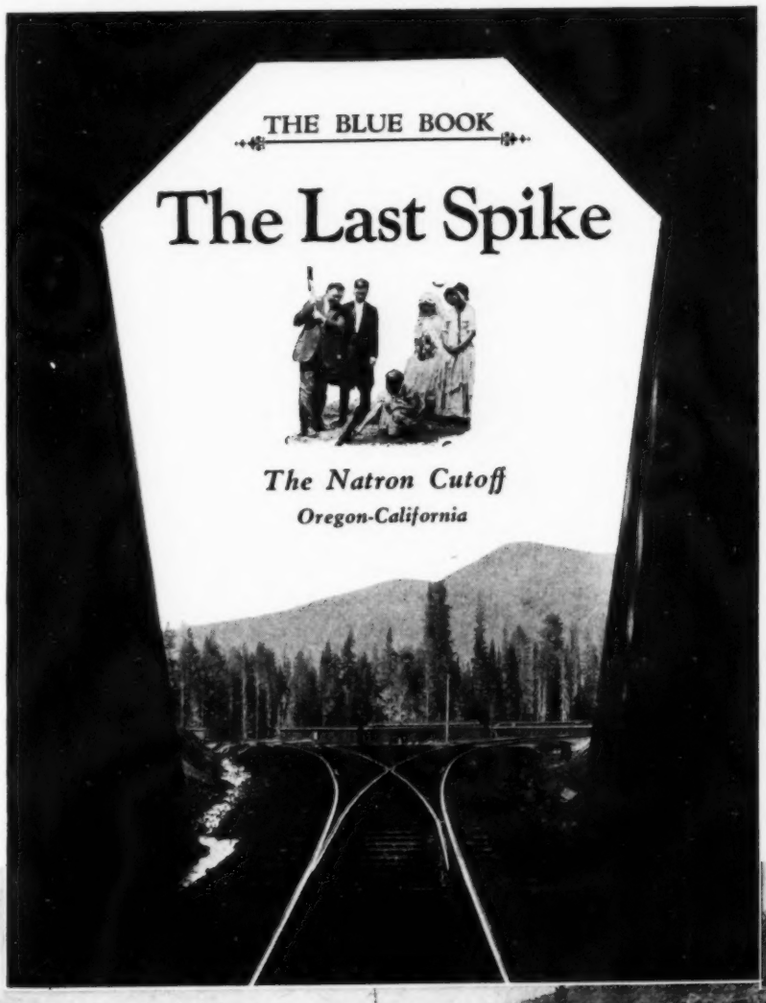
ONE of the chief reasons why the October photographic prize is awarded to Herbert B. Woodling, employed by the Department of Public Service of the City of Akron, Ohio, may be discovered by a glance at the winning photograph which appears herewith. Although there are about twenty men in the picture, each and every one of them is attending strictly to business and not a man is standing in an attitude of repose with his eyes fixed on the camera.

Mr. Woodling's prize picture shows the pouring of concrete in the bottom of the Imhoff tanks of the new sewage treatment plant which is being built for Akron by the Walsh Construction Company of Davenport, Iowa. This plant will cost $3,500,000 and work was begun in March of this year. Good progress has been made thus far and much of the important work has been completed.

In addition to showing twenty men all working at the same time, the photograph gives a very clear idea of the methods used in constructing the Imhoff tanks. The prize was awarded to Mr. Woodling after consideration of a record number of entries and there were so many good photographs that it was extremely difficult to pick the winner.

Our fourth photographic contest is now under way and the rules and regulations are stated on page 9. Turn back to that page, read the conditions, get out your camera and go after the prize.





The upper photograph shows a wye track built partly in a tunnel.

One of the big shovels appears in the lower picture

At left—
Cutting a pathway
along the slopes
of the Cascades

Below—
A section of
completed track
in Oregon

At right—
Right of way after the timber had been cleared off

Below—
Bridges of this type are frequent on the Natron Cutoff

A "Trail to Rail" pageant at Eugene, Oregon, marked the opening of the Southern Pacific Natron Cutoff. The celebration lasted two days. The stage in the lower picture ran between San Francisco and Eugene in the pre-railroad days

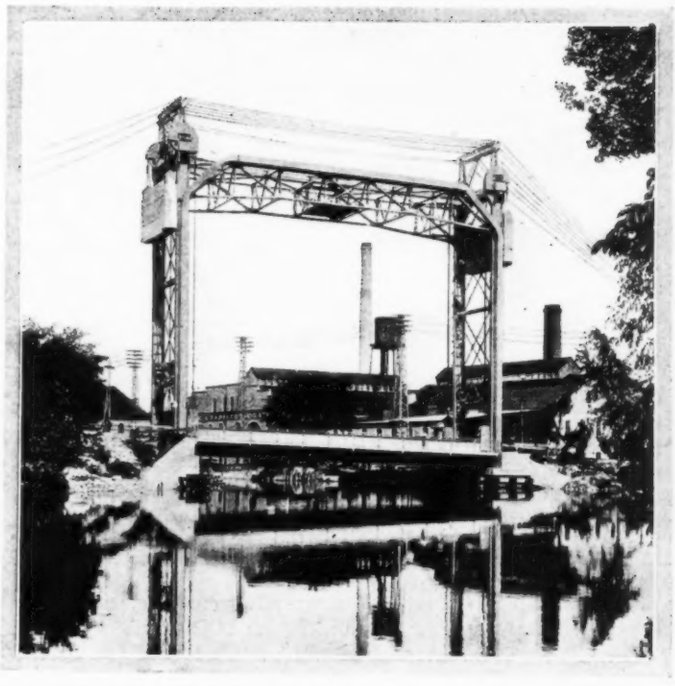
Building a Steel Lift Bridge

New Structure Spans Stream at Kaukauna, Wisconsin

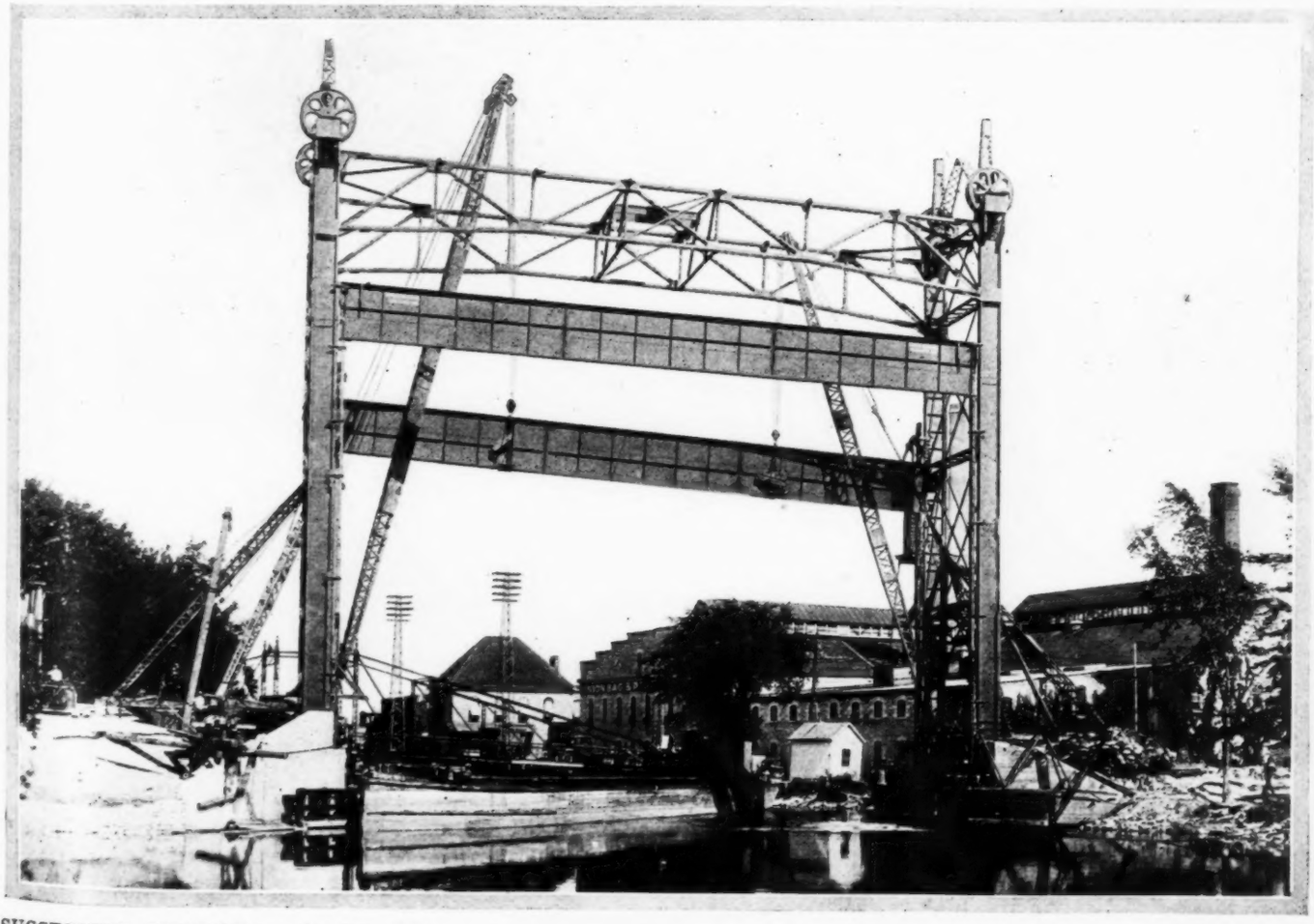
THE construction of a steel lift bridge recently was completed at Kaukauna, Wisconsin, by the Worden-Allen Construction Company of Milwaukee. The job was done for the city of Kaukauna.

The photograph at the bottom of this page shows the operation of lifting one of the heavy steel panels into place. This was accomplished by the installation of two derrick booms at either end of the bridge. The long steel panel was brought to the side of the bridge on the barge shown underneath. The upper photograph shows the finished structure.

The completed bridge is shown in the photograph at the right



The lower picture shows the method of handling one of the heaviest steel units that went into the structure



Concrete Garages Built

A PRACTICE which is in pretty general use among large construction companies but which has not found wide-spread acceptance with local contractors is that of using bench-made forms on concrete work and erecting them with common labor. The contractors on an up-to-date storage garage at Huntington, W. Va., which is just being completed, employed this system in order to cut their costs. In addition to the money-saving feature, bench-made forms were almost a necessity on this job because of the irregular character of the form work. Every beam in the building is pitched, and the floors are all 3-in. higher at the ends and sides, sloping to the drain in the center.

The building, a brick and concrete structure, has 6 stories with staggered floors and a wide ramp leading from the basement to the roof. A couple of power saws were installed in the basement, and every form piece, except the joists, was made there from blue prints. All joist bearers, blocking, and strips necessary for the erection of any piece were loosely nailed to it in order that they might be at hand when the piece would be put in place. These extras were all shown on the print. Attaching them loosely at the bench saved time in erection.

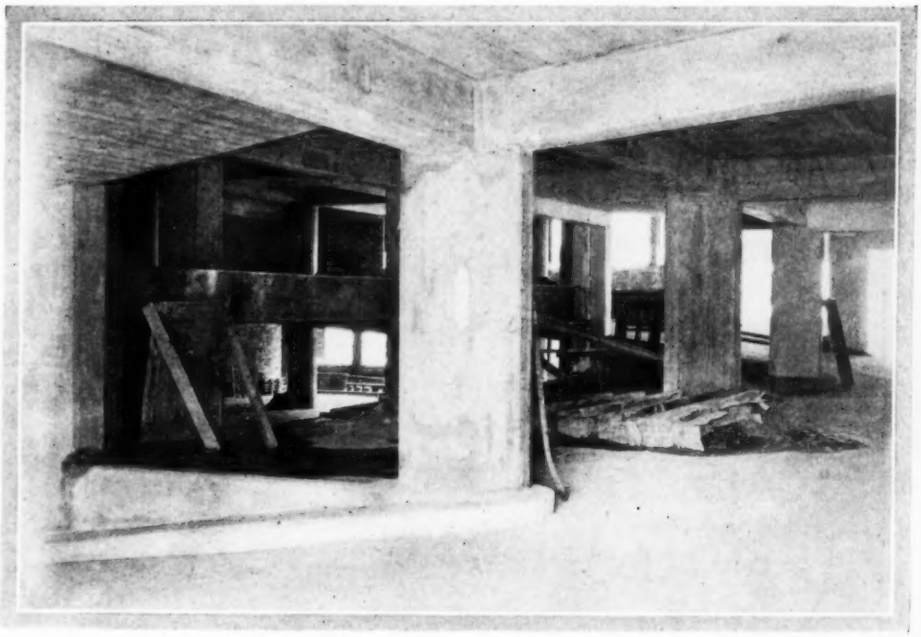
As the forms were being stripped from the concrete on each floor, two men with drawings of every piece followed the wreckers. When they found a broken piece, they rebuilt it. The complete set of forms would then be raised to the next floor and erected by laborers. Making the forms from drawings gave the contractors a further saving by enabling them to compute and purchase in one lot the total amount of lumber they would need.

One unusual feature of the construction of storage garages is the ability to deliver material by motor truck to workmen on any floor, once the columns and floors have set. This circumstance was used to full advantage on the Huntington

Partly completed ramp showing wide roadway and flat curves. The man on the right is G. E. Deatherage, superintendent

With Bench-Made Forms

Contractor Cuts Labor Costs by Making Form Pieces from Blue Prints



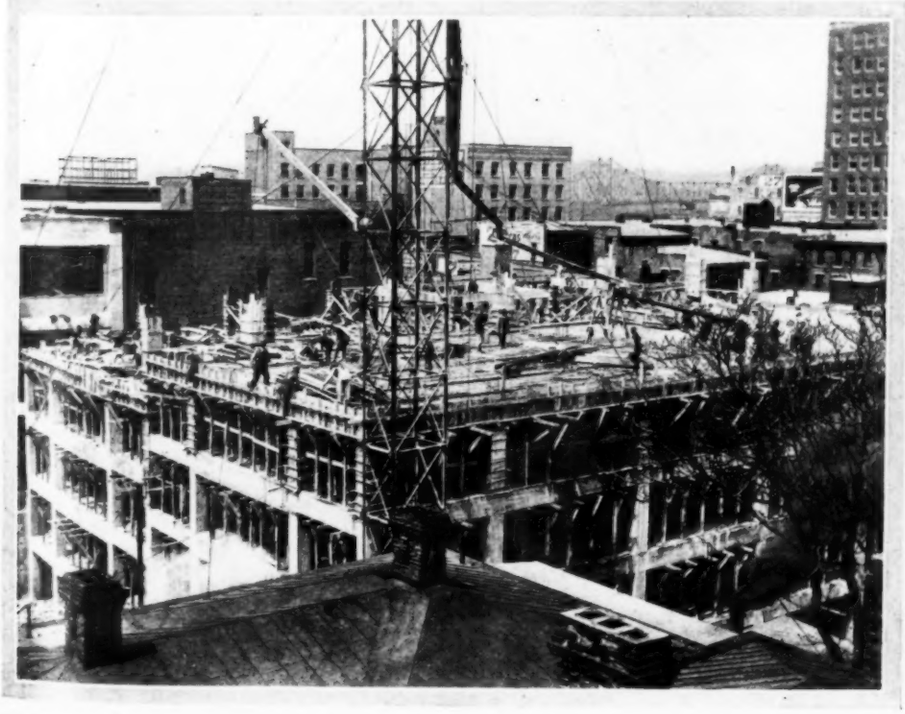
Interior of the garage showing spacing of columns

job, all brick, sand, and mortar being hauled directly to the mason's scaffold.

The building is intended to be the finest example of a storage garage in its section of the country. Thorough study was made to reduce accident hazards to a minimum. The gasoline storage tanks are located below the street level at some distance from the building. The passenger elevator shaft is separated from the rest of the garage by a 6-in. tile partition, and steel-framed, tin-clad doors make it safe even in case of explosion. Safety has been the watchword both in design and construction.

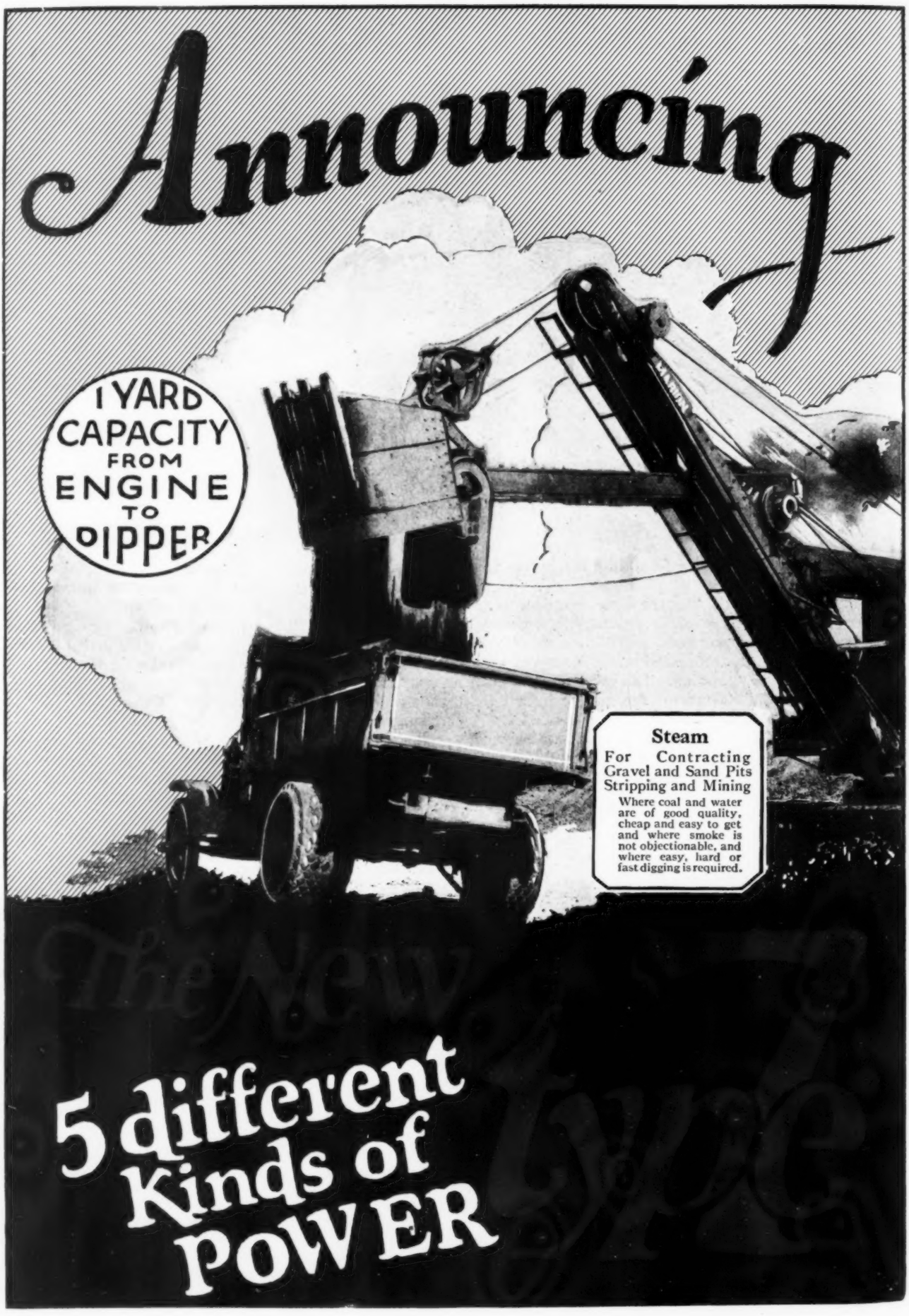
The ramp is another feature of the building that shows improvement over most of its predecessors. It is made wide enough for two cars to pass with ease, and the grade and curves are light enough for any driver to take his car to the roof in high gear without difficulty. A 2-ft. sidewalk along the 20-ft. roadway adds to the comfort of those who wish to go from one floor level to another. Automatic stop and go signals will regulate traffic on the ramp. The floors have an integral surface of granite chips, and the walls are to be given two coats of oil paint with high gloss finish. The job will require 1,500 gal. of paint.

The garage is about 100 ft. square and has a capacity of from 350 to 400 cars. Provision is made for adding to the building as the need arises. Meanor & Handloser of Huntington were the architects, and C. W. Hancock & Son of Lynchburg, Va., did the concrete work. The job is being completed by the owners' construction company. G. E. Deatherage has been superintendent of the job throughout.



Garage and office building under construction. The boom for raising the forms may be seen attached to the steel tower

Announcing



5 different Kinds of POWER

the New Line MARION 1-Yard

Shovels - Draglines and Cranes

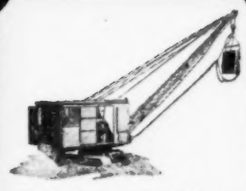
At last, the one yard shovel user may make an impartial and honest selection of a one yard Shovel, Dragline or Crane built to fit the job. Here is a brand new line—new in design—new in construction—new in principle—with many new and novel profit-making features as only a leader in the industry for nearly a half century could develop them. This New Line of Type 7 Shovels, Draglines and Cranes is Marion's most brilliant achievement. Whatever the need or wherever the location, the New Type 7 in one of five kinds of motive power is ready to give you results never before attained by a one yard shovel, dragline or crane.

Outstanding in its extraordinary performance, beyond comparison in its many surpassing features, the New Line of Marions stand alone as the first successful attempt to build a one yard shovel, dragline or crane to fit the job. You don't have to take any one kind of power just because it is the only one the maker has to offer—Marion makes them all.

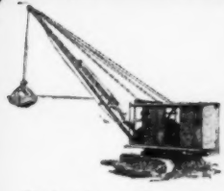
The Marion Steam Shovel Company
Marion, Ohio

Gasoline-Electric
For Contracting, Clay, Gravel and Sand Pits, Cement Plants, Mining.
Where coal or water are not convenient or water is of poor quality and where easy, hard or fast digging is required.

Electric
For Quarries, Clay, Gravel and Sand Pits, Cement Plants, Mining.
Where a permanent source of power is available at reasonable rates and where easy, hard or fast digging is required.



Friction Dragline
Gasoline or Diesel
For Contracting, Levee Work, Irrigation, Stripping Drainage and Sub-Division Work.
Where coal and water are poor or no source of permanent power.
Convertible into a 1 yd. shovel



Friction Crane
Gasoline or Diesel
For Building Supply Yards, Industrial Plants, Coal Yards, Gravel and Sand Pits, Concrete Plants.
Where coal and water are poor or no source of permanent power
Convertible into a 1 yd. shovel

Team Work Proves Value

Three Members of Firm Act as Operations—Grading—

THE Tri-Lake Construction Co. of Columbia City, Indiana, pins its faith to the numeral 3 in more ways than one. It is made up of three men, and on the paving job which the company is now doing between Marion and Huntington, Indiana, the work has been divided into three operations, with each of the three partners acting as superintendent of one branch of the job. C. C. Deal is superintendent of paving. W. Y. Brand is superintendent of transportation. H. C. Bollinger is superintendent of grading. Anyone who is familiar with the construction of modern concrete roads will realize that they have divided up the work about equally and that no one of the three can succeed in his share of the work unless the other two co-operate. Real team work is demanded by this setup.

The Tri-Lake Company has the contract for a

At left—Part of the finished operation with a Lakewood floatbridge. The man in the foreground is working on the center joint

Below—A general view of the job showing two trucks all ready to supply the paver's demands

On an Indiana Road Job

Superintendents of Three Main Transportation—Paving

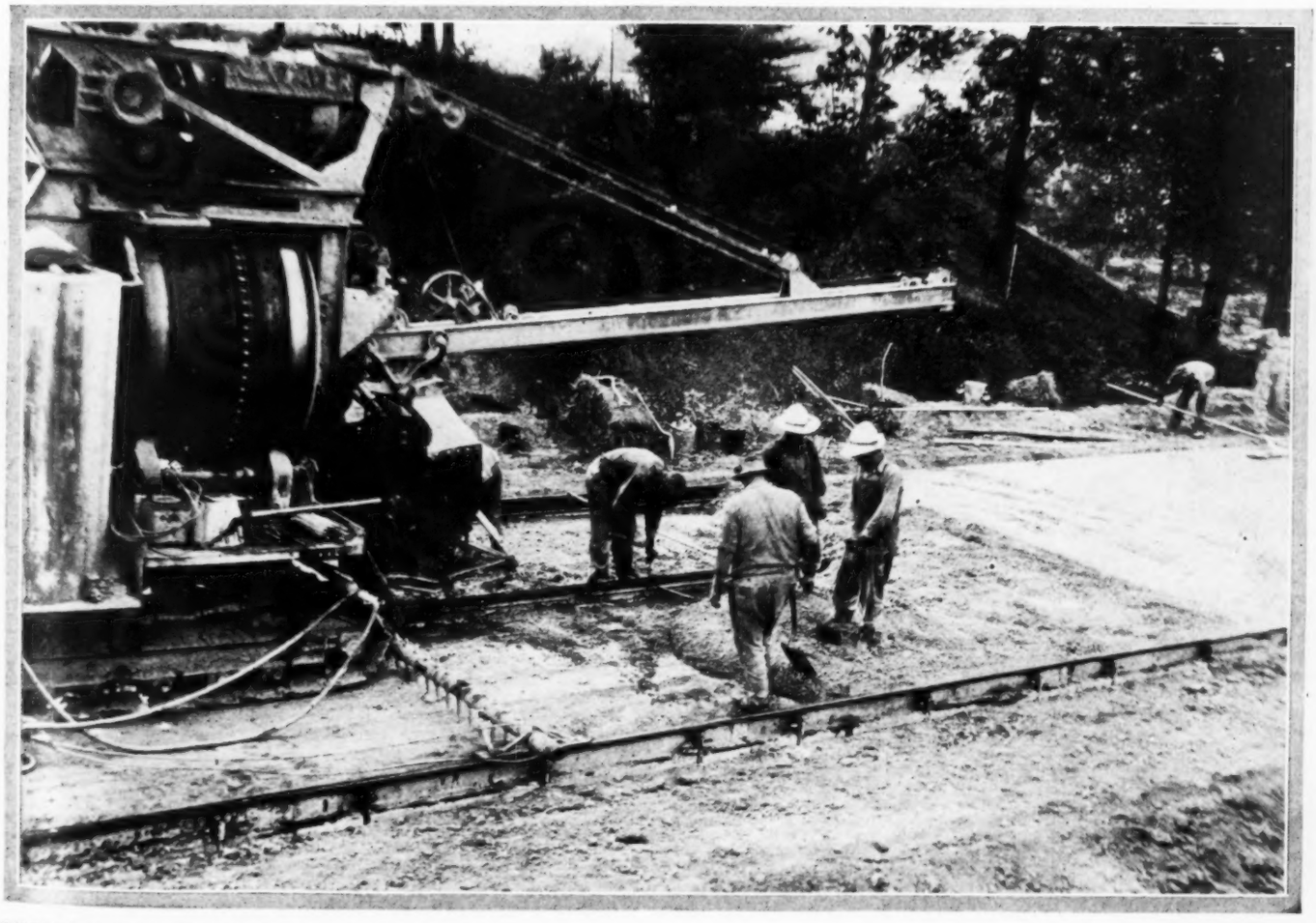
stretch of road 10.6 miles in length. The new pavement is 18 ft. in width and the concrete is 9 in. in thickness at the edges and 7 in. at the center. Marginal bars and center joints are used for reinforcing.

Work began on June 7th and has proceeded in satisfactory fashion, although recently the heavy rains which have inundated much of the Middle West have caused unusual delays. The job is well equipped with modern road-making machinery, and the photographs which accompany this article give a good idea of how the work is being done.

The chief unit, of course, is the Rex 21-E paver which, while the good weather lasted, laid concrete at the rate of about one mile a week. The finishing is done with Lakewood equipment, a screed and floatbridge being used. The newly laid pavement is covered with burlap which is handled by a Figel

At right—The Hug turntable on which the trucks are turned so that they can back to the paver and discharge their loads

Below—Setting the center joint under the shadow of the big Rex paver



Breaking up the subgrade with graderooter

burlap wagon which has a capacity of 800 ft. of burlap carried on two 400-ft. rolls.

Materials are brought to the mixer in small dump trucks, about 40 of them being employed on the run between the material yard and the mixer. They operate over the subgrade and are turned on a Hug turntable stationed about 200 yd. from the paver. They back in the rest of the way.

The two photographs on this page show the preparation of the subgrade. A 5-ton caterpillar tractor furnishes the motive power for a Lakewood grade rooter and a Lakewood subgrader. An interesting piece of equipment which has worked very well is shown at the extreme right side of the lower photograph. This is a Fordson originally equipped with what are known as golf wheels which have a wide tread for use on golf courses. To these wheels the contractors add concrete until the machine weighed three tons. They then put it to work rolling the subgrade. About 80 men and 15 teams also are employed on the job.

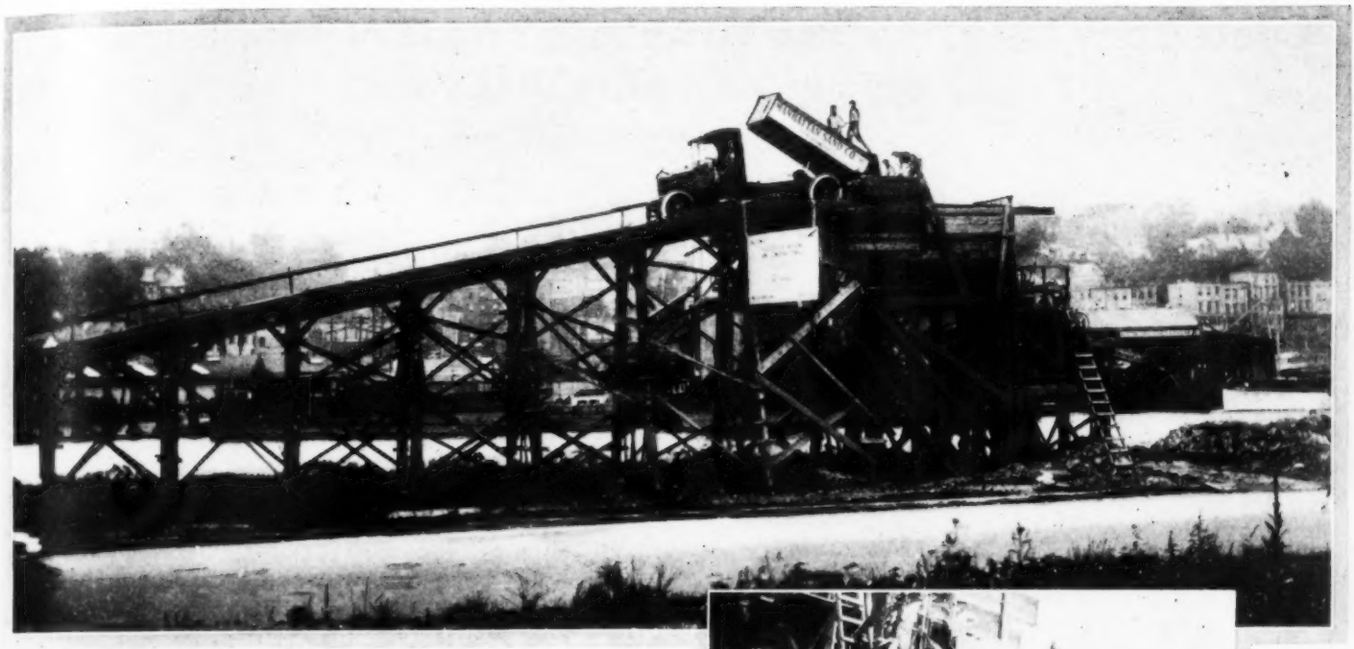
Preparing the way for the concrete with a Lakewood subgrader. The Fordson used as a roller is shown at the extreme right

Get out your Camera

Get after the $25.00 prize

Conditions of November Contest on Page 9

Elevated Bins and Elevated Trucks



A long ramp which was built of old timber appears in the upper photograph. The center picture shows one of the trucks with its elevated body receiving a load of concrete from the mixer, and at the bottom, the same truck is dumping its load directly into the forms

PUTTING sand and gravel in elevated bins without the use of buckets or conveyor, and chuting concrete straight from the motor truck to the forms with the aid of raised bodies are two unusual methods being practiced on a river wall job along the Harlem River Speedway in the Borough of Manhattan, New York City. The Ascher Engineering and Construction Co. of New York is pouring about 4,000 yd. of concrete in the 1,200 lin.ft. of wall on this job, and when they looked over the ground preparatory to making their plan of construction, they were faced by the usual problem of finding the most economical way to do the work with the equipment and material at hand.

There was an old bulkhead of long leaf yellow pine timbers extending along the river which had to be removed to make way for the new wall. The Ascher Company hit upon the idea of using this timber to construct a ramp for motor trucks. This gave them a means of elevating the concrete aggregates without moving a piece of heavy machinery to the job. Furthermore, the ramp was erected without the purchase of a single stick of wood. So its first cost was nothing to worry about.

When it came to the problem of giving the concrete a little elevation in order to have it flow easily down the chutes to the forms, Samuel Danels, Superintendent on the job, found the practical solution. He raised the bodies of one-ton Ford trucks about 4 ft. upon the timber frames and operated them as usual in filling and dumping. The novel design has worked admirably and has given complete satisfaction.

The photographs afford a good idea of the size and slope of the ramp. There are two bins at the top. The mixer is a ½-yd. Ransome. The trucks had to haul the concrete only a couple of hundred yards to the chutes. A clear conception of the superstructure on the Ford chassis can be gained from the pictures.

The wall is built double on a concrete bottom. The double walls are 21-ft. center to center and are 11½ ft. high. They are connected at 6-ft. intervals by walls containing arched openings. A 20-ft. sidewalk with a concrete base and asphalt surface is being laid on top of the wall.

Placing Concrete at Long Range

Contractors Use Auxiliary Mixer and Frame of New Building to Supplement Tower and Chute

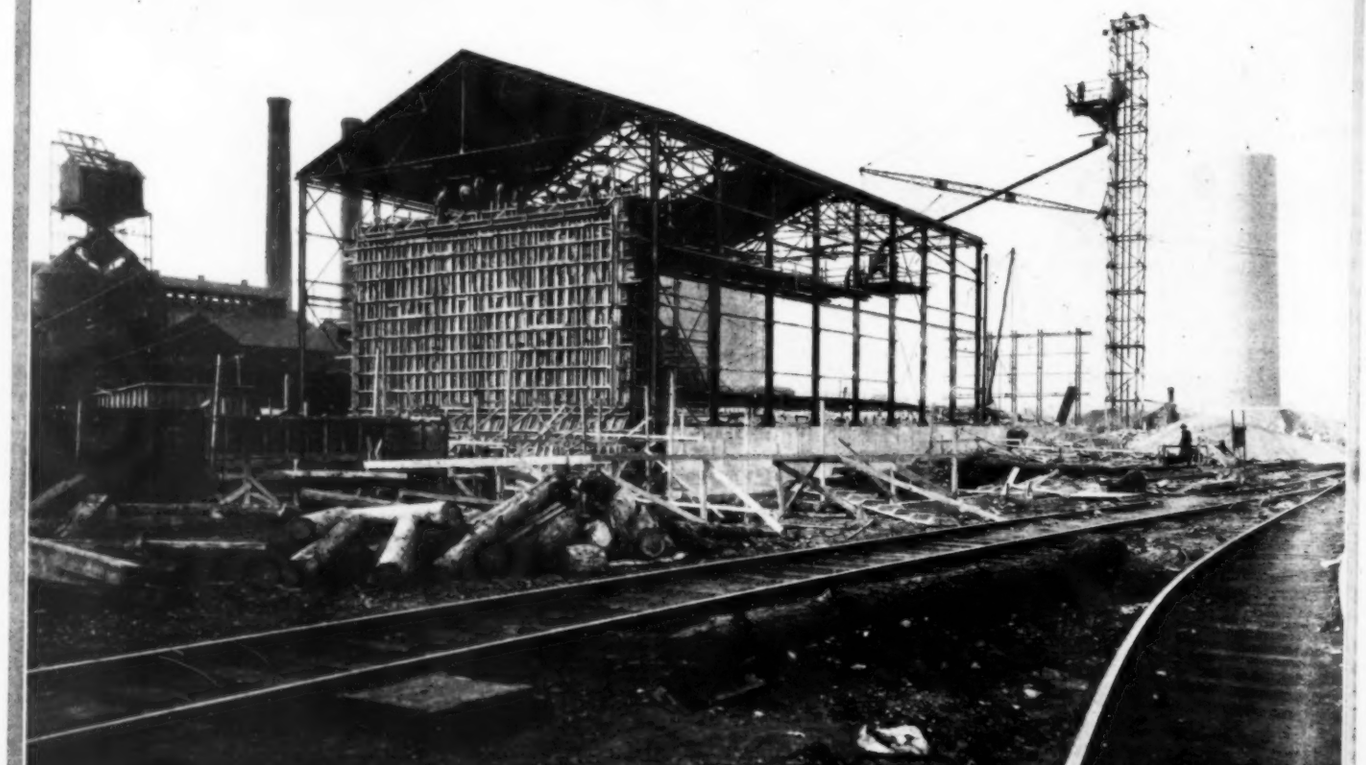
By G. W. Maker, Engineer, Aberthaw Company

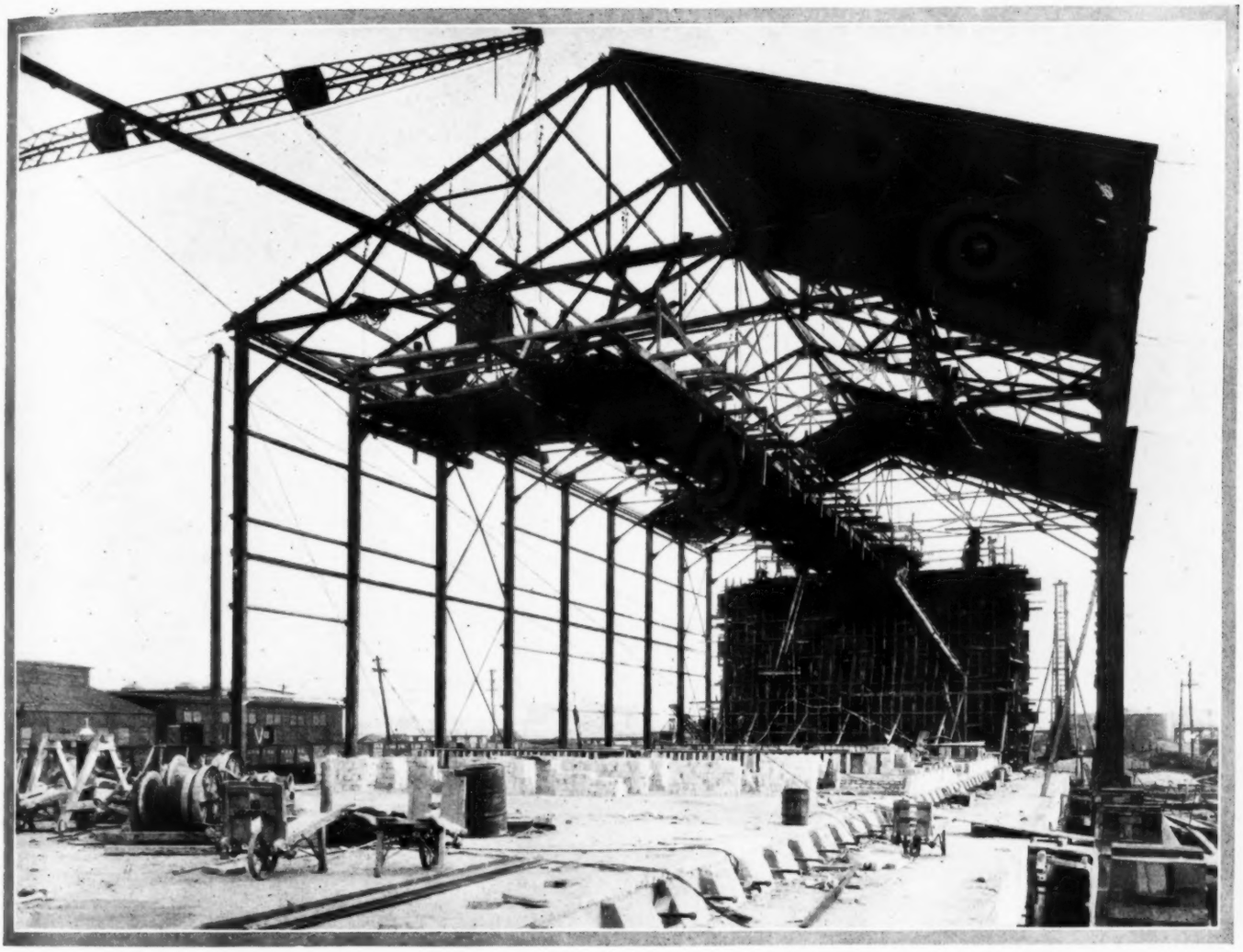
THE New England Fuel & Transportation Company has under construction at Everett, Massachusetts, a new development consisting of a battery of 55 coke ovens with appurtenant structures, and in connection therewith the various structures comprising a by-products plant. The only land available for the new development was a narrow area adjoining the existing coke works. This area was so completely occupied by the new construction that it left little or no room for the contractors' plant. The site was originally a salt-marsh and the foundations were accordingly of unusual weight. The contract for the ovens themselves was awarded to the Willputt Coke Oven Corporation of New York, while a second contract covering all foundations was awarded by the owners to the Aberthaw Company of Boston.

This foundation contract included, besides a large number of wood piles, some 9,500 cu.yd. of concrete, spread over an area approximately 175 ft. wide by 1,100 ft. long.

The main section of the development called for approximately 7,800 yd. of concrete, while the by-products section called for approximately 1,700 yd. About half of the total yardage was in the foundation block of the coke ovens while the balance was in widely separated units varying from a few yards to nearly 1,000 yd. Because of the limited area available for construction purposes, and because of the fact that the financial success or failure of the contract depended largely on the economical handling of concrete, unusually careful study of plant possibilities was made. The first consideration was the use of a chuting arrangement with a tower of sufficient height to reach both limits of the work. This was decided against partly for the reason that the central point of the work was not the central point of the total yardage of concrete and largely because a tower of sufficient height with accompanying chutes would involve a plant expenditure that did not seem warranted.

This photograph shows tower and chute delivering concrete to hopper on staging suspended from frame of new building. The wall under construction may be seen at the left





The method of placing the concrete is plainly shown in this photograph. It is wheeled in buggies along the staging and then placed in the forms. In order to get the concrete in the lower part of the walls, chutes were passed through ports in the forms. They may be seen in this picture

The studies indicated that the best layout from the viewpoint of both cost and progress would be the use of a main mixing plant located near the central point of the coke oven section of the work, which would handle approximately 75 per cent of the total yardage of concrete and the use of an auxiliary small mixing plant for the concrete in the by-product section of the work, and for one outlying block of concrete in the main section. This layout was decided on and in practice proved even more successful and economical than the preliminary figures showed. The main concrete plant consisted of a four-bag mixer which delivered concrete to a tower approximately 100 ft. high. A chuting arrangement from this tower delivered concrete within a radius of approximately 150 ft. For several small blocks of concrete, chutes terminated at a floor hopper, and the concrete was carried a short distance by buggies.

This plant layout was further complicated by two heavy pinion walls located one at each end of the coke ovens. These walls were 34 ft. high, 12 ft. thick at the base, and 6 ft. at the top. Each contained approximately 380 yd. of concrete. Specifications required the placing of this concrete continuously and would not permit construction joints. The tower of the main mixing-plant was not of sufficient height to permit chuting concrete to a wall of this height, and special consideration had to be given to the construction of this section of the work.

A mast hoist arrangement was considered, but seemed to be inadvisable due to the fact that the two-bag mixer would not handle sufficient concrete in a reasonable time.

The final solution of this problem was both novel and interesting. The coke ovens were to be temporarily housed by a light steel frame structure and the oven foundations were constructed first to allow the erection of this frame. A staging was then suspended from the framing, using old wire rope which was available at the plant. The chute from the tower was run directly to a floor hopper on this staging, and the concrete delivered by buggies to each wall. The concrete in the lower half of these walls was delivered through ports left in the forms as shown in the photograph on this page. The 380 yd. of concrete in each wall was placed in approximately 12½ hr. by this arrangement.

When the first wall was completed, the staging was lowered and later reassembled for use in the other wall.

The auxiliary mixing plant consisted of a two-bag gasoline-driven mixer mounted on wheels. This equipment mixed all of the concrete for the by-products plant as well as one block of approximately 650 cu.yd. in the coke wharf at the opposite end of the development. Because of the limited working area, part of this concrete had to be placed by buggies, traveling on temporary trestles.

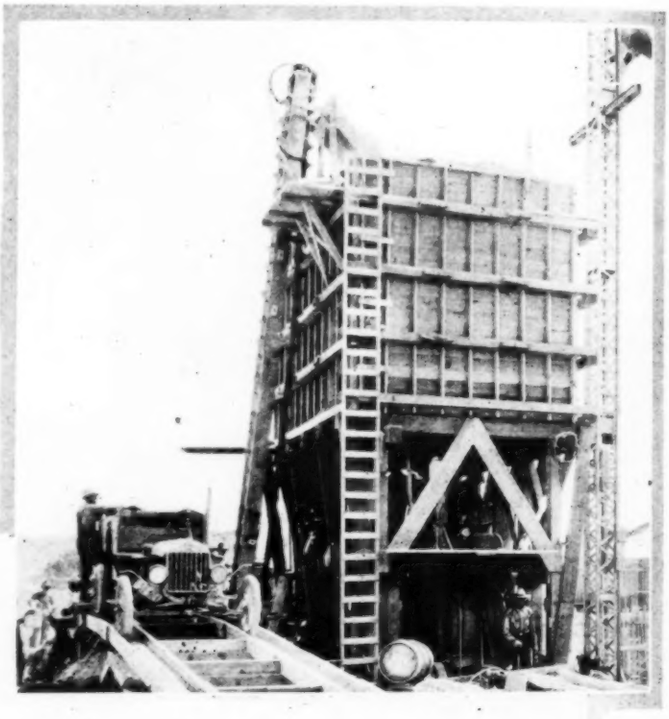
This work was carried out under the direct supervision of S. L. MacMillan, Chief Engineer, Marine Division, the Aberthaw Company, Boston.

Tall Mast Handles Texas Hotel Job

Steel Tower 200 Feet in Height is Main Unit in Construction of 14-Story Building

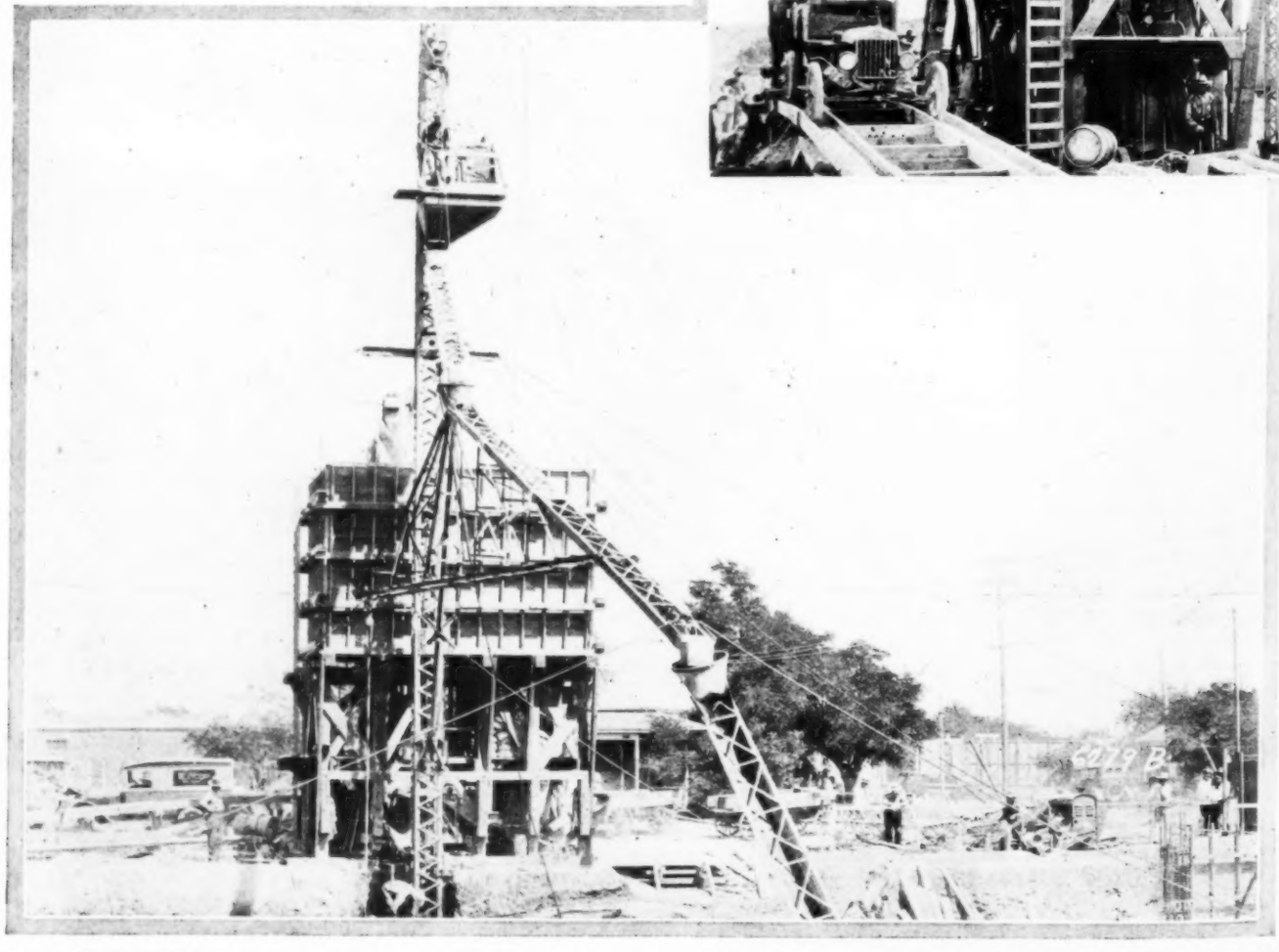
A STEEL mast hoist 200 ft. in height is being used for pouring the concrete for the 14-story Herring Hotel at Amarillo, Texas, which is being built by the H. W. Underhill Construction Co. As may be seen from the photographs which accompany this article, this Insley mast was put up at the very start of the work, and at the time the photographs were taken was pouring concrete for the foundations. It was made high enough to take care of all the concrete requirements of the 14-story building. As the new hotel is to be ready for occupancy in December of this year, the contractor has been operating three 8-hr. shifts on the concrete work.

The two photographs on this page show the bins and mixing plant at the foot of the mixer. These bins are charged by a bucket elevator which is shown in the photograph at the right. The concrete is mixed in the Rex 14-S mixer equipped with a batch hopper, and a Clyde double-drum gasoline hoist handles the job of getting the concrete bucket to the top of the tower. The photograph at the bottom of the page shows the arrangement of the chute with counterweight.



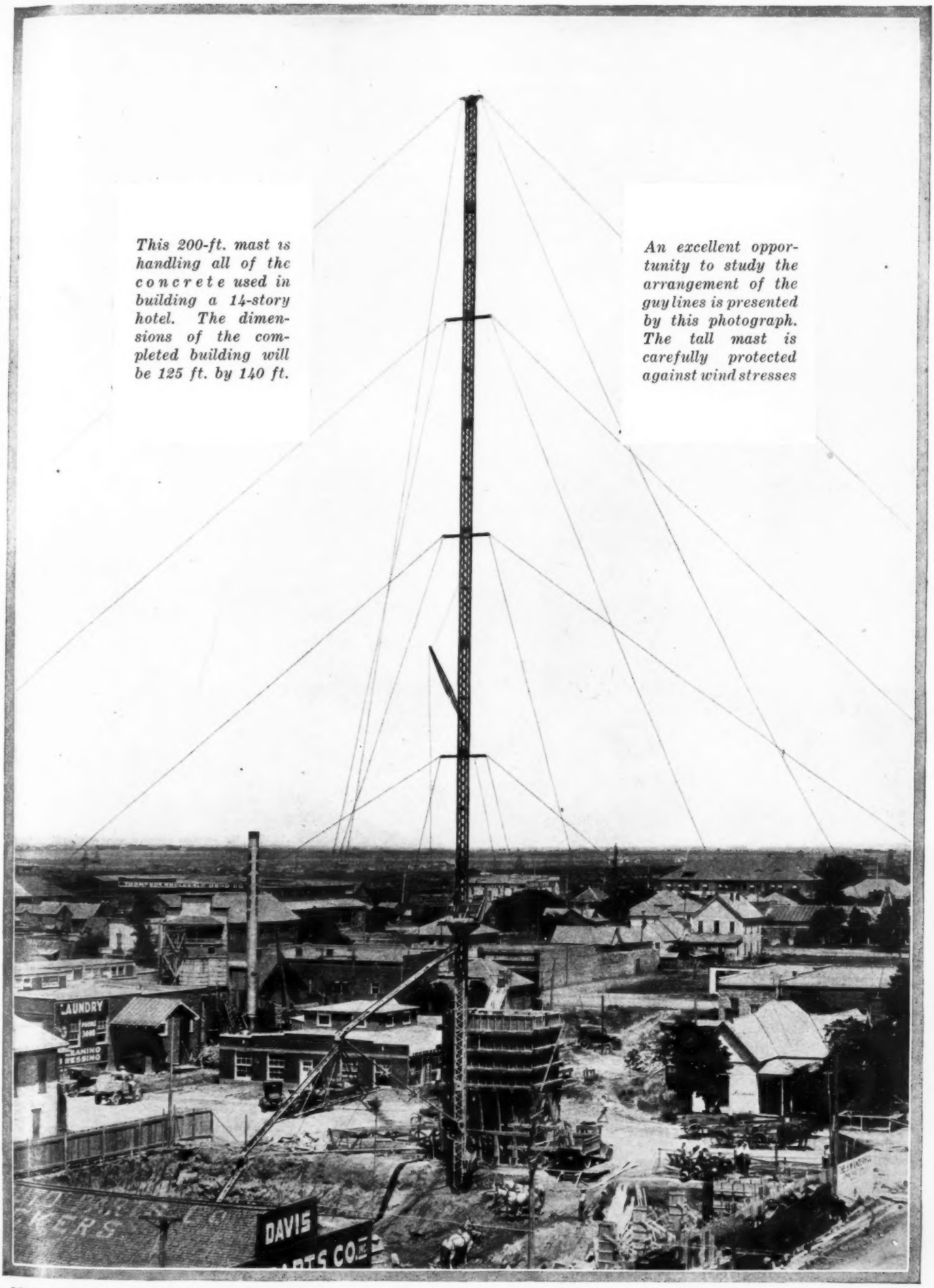
At right—The bins above the mixer are charged by a bucket elevator. The materials are brought in trucks and dumped into the hopper

Below—The arrangement of the chute with counterweight is shown in this photograph



This 200-ft. mast is handling all of the concrete used in building a 14-story hotel. The dimensions of the completed building will be 125 ft. by 140 ft.

An excellent opportunity to study the arrangement of the guy lines is presented by this photograph. The tall mast is carefully protected against wind stresses



All Roads Look Alike To Them

Bridgeport Contractors Handle Asphalt and Concrete Paving Jobs at Same Time

IN these days when everybody seems to want to be a specialist, it is rather refreshing to find a contracting organization to which all types of road construction look alike when there is work to be done. The Silliman & Godfrey Co. of Bridgeport, Conn., has been keeping out of the specialist class this season by handling simultaneously two jobs of entirely different types on the Boston Post Road for the State of Connecticut. In the town of Westport these contractors have been putting down an asphalt pavement in connection with the widening of the famous highway. The asphalt was brought from a mixing plant in Bridgeport 12 miles away.

A few miles nearer home at Fairfield, the Silliman & Godfrey Co. has been building a little more than a mile of concrete road. This pavement has been constructed in three strips with a trolley line running through the center strip which is 10 ft. in width. The photographs on the opposite page show this work in progress with the Ransome mixer standing on the subgrade at the side of the road and pouring concrete for the center strip. These photographs were taken on a day when the mixer was making one of its best runs on the car track strip. It laid a total of 850 ft. on that day.

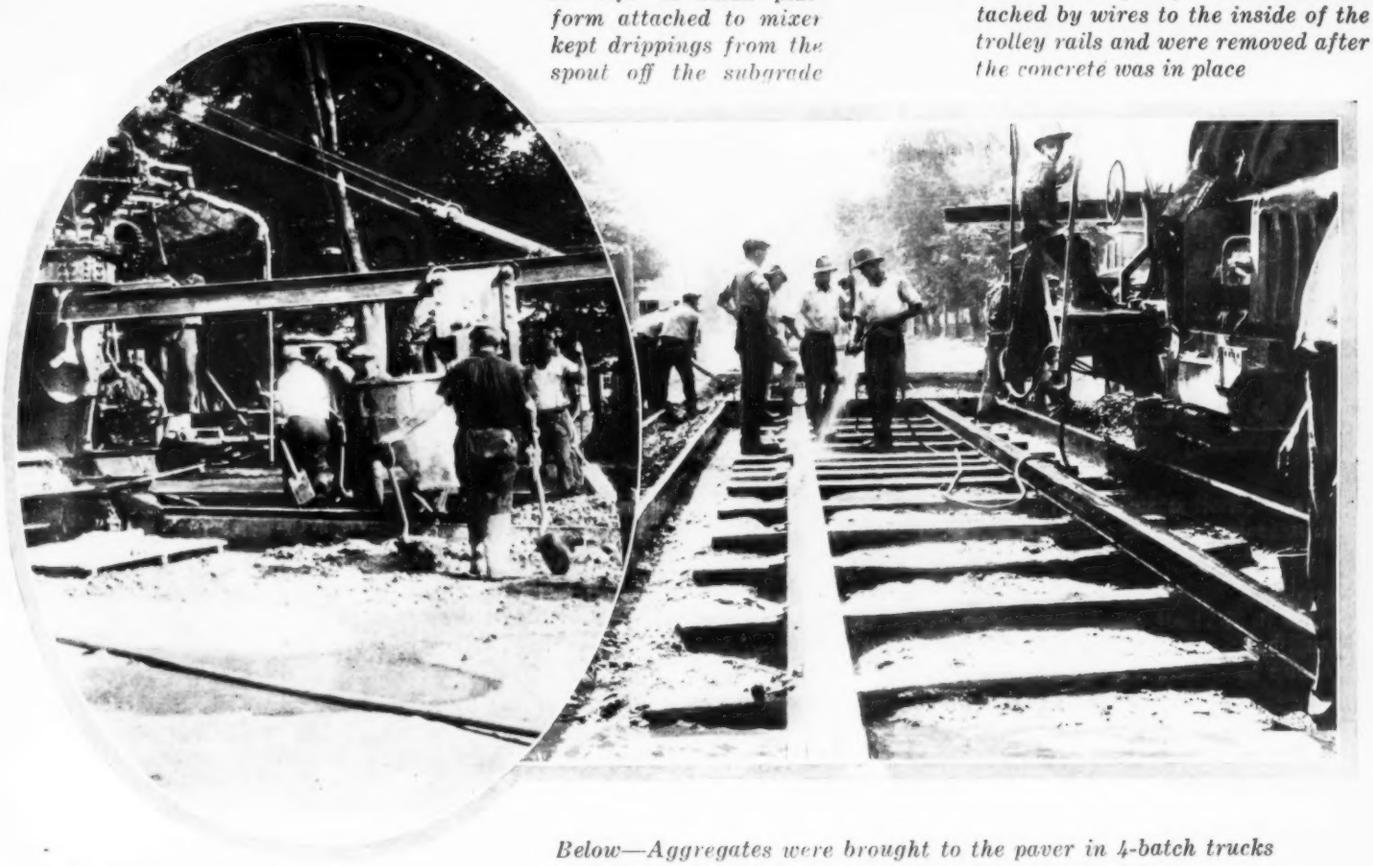
Aggregates are brought from Bridgeport where they are batched and loaded into trucks by a Blaw-Knox plant set up on a dock. John D. Rogers is superintendent in charge of the work, and W. N. Creamer is the Resident Engineer for the Connecticut Highway Department.

At right — Handling the asphalt which has just finished its long trip from Bridgeport

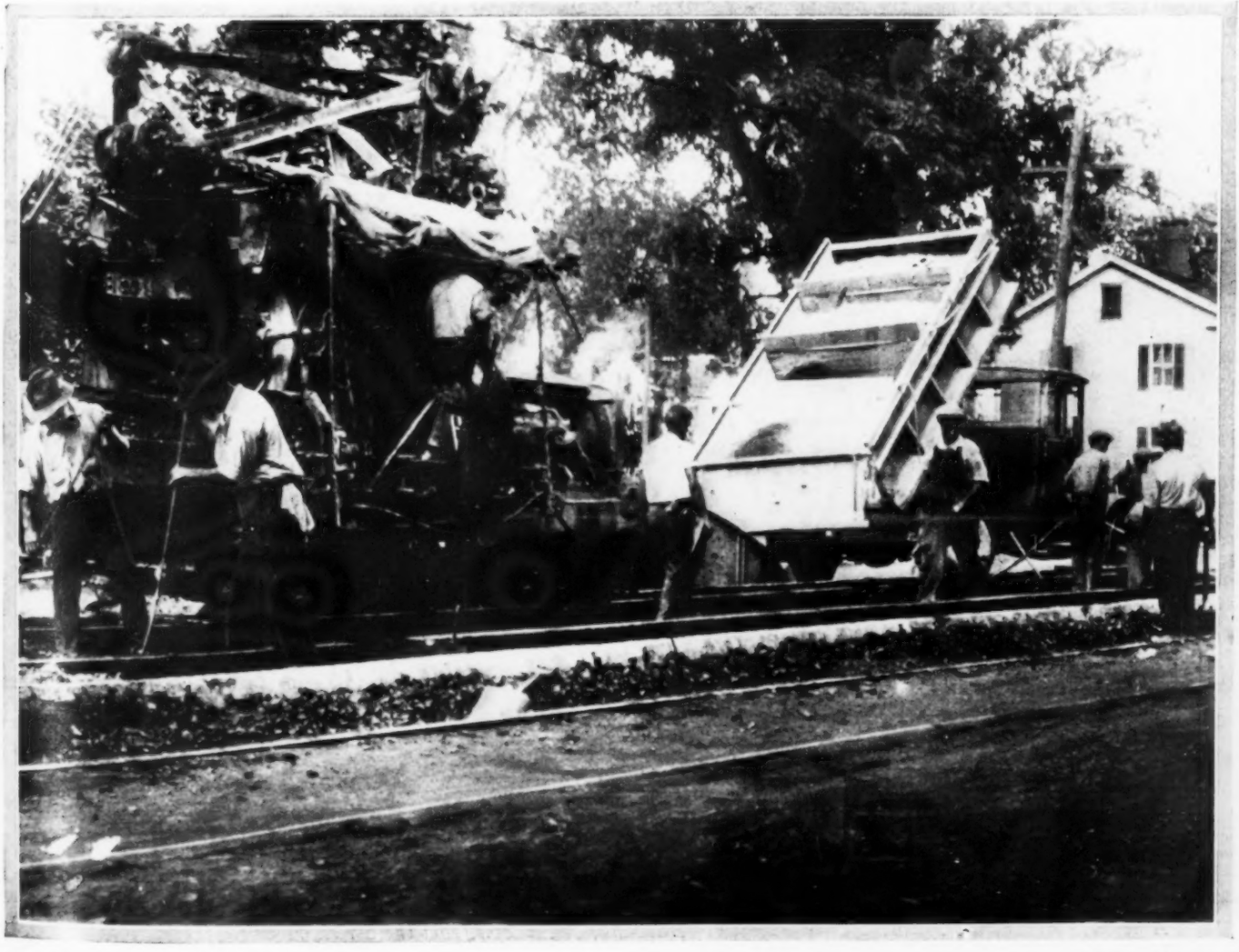
Below—This roller followed right on the heels of the spreading gang

At left—A small platform attached to mixer kept drippings from the spout off the subgrade

Below — Strips of wood were attached by wires to the inside of the trolley rails and were removed after the concrete was in place



Below—Aggregates were brought to the paver in 4-batch trucks



Builders Keep Pace With

CONSTRUCTION progress in the motion-picture industry can be measured by the new First National Studios which have just been completed at Burbank, California. In less time than it took to build Hollywood's first little stage and laboratory two decades ago, a great film city was completed. From the time ground was broken until the entire plant comprising thirty huge buildings, costing about $2,000,000, was in activity only 70½ working days elapsed.

One of the big studio buildings under construction showing the crane which erected the big timber trusses

All of the buildings, including administration buildings; four huge stages, projection, camera and cutting rooms; dressing rooms; wardrobe; property building; power plant; garages; and various shops, mills and sheds were designed and constructed simultaneously by The Austin Company of California. The total floor space is over 350,000 sq.ft.

One of the unusual features of the job was the application of structural steel methods to wooden construction used in the stages. Wooden trusses are now generally favored by the moving-picture industry in the construction of dark stages because of the heavy hanging loads required, and the necessity of using nails and hooks to attach settings and of suspending overhead lights at desired distances without delay.

Fifty-six great bow-string trusses of Oregon pine, each measuring 137 ft., were used. Each truss weighed six tons. They were placed to a 35-ft. clear height by a single crane with a 60-ft. boom. The first truss, which caused the crane to tip, was placed within two hours. By elevating the boom to the maximum angle the remainder were placed at the rate of one an hour. These trusses were designed by The Austin Company with a 6-in. camber to support a hanging load of 1,000 lb. at each panel point.

The side framing of the stages kept pace with the erection of the trusses, and each of the four stages which measured 137 ft. by 240 ft. was framed completely in two days.

In the erection of the administration group, new speed marks in the construction of office buildings were set. The excavations were made, forms built and foundations completed in 12 hr. The sub-flooring was completed in 2 hr., and the entire framework of the three buildings, consisting of the administration building, scenario and production buildings and the casting building was finished in three days.

By figuring out the maximum number of carpenters that could work on these structures at one time, the greatest possible speed was obtained. The carpenter gangs were followed in rotation by the lathers, plumbers and plasterers, each crew being of the maximum number that could work advantageously. In this manner the buildings were plastered four hours after the carpenters had finished.

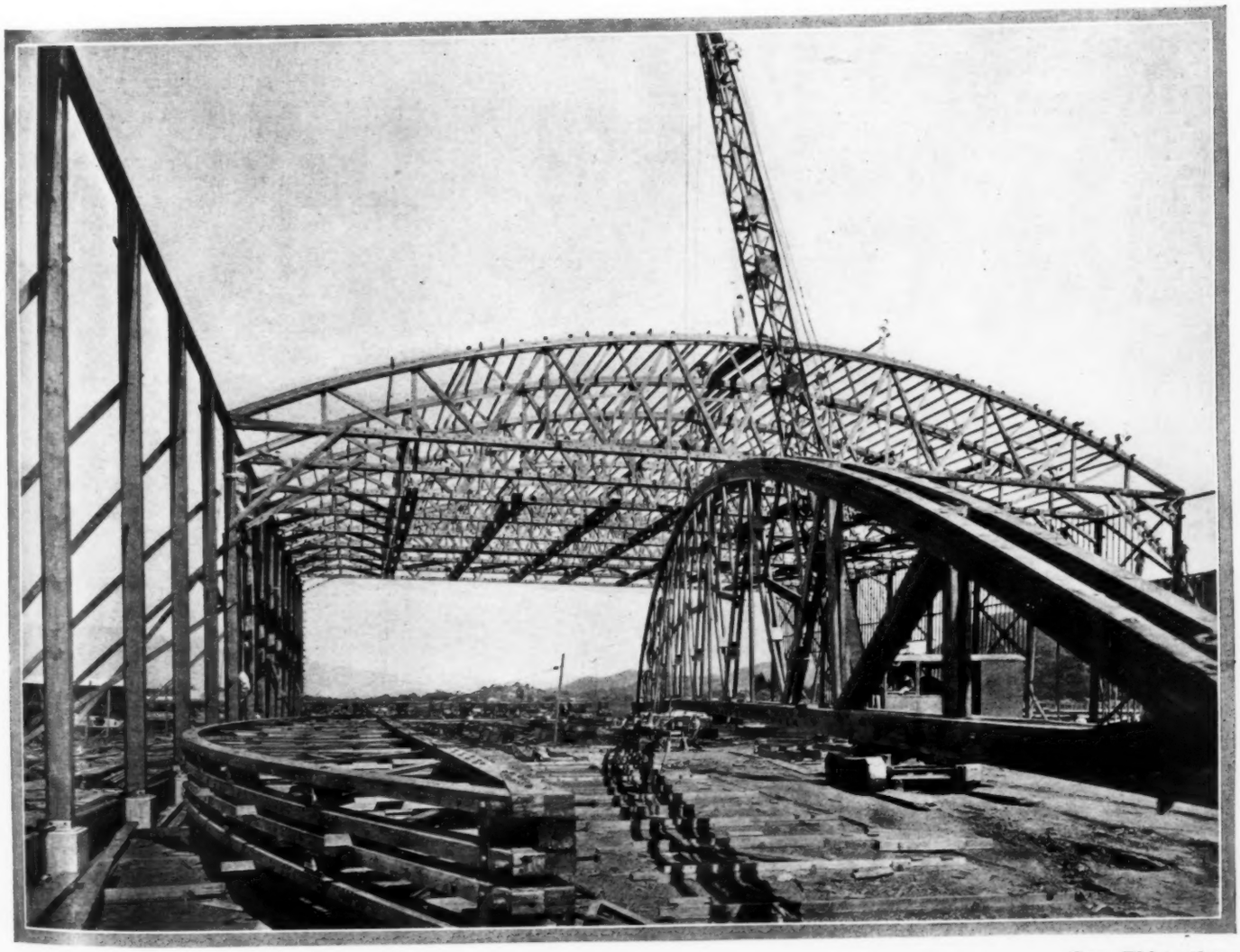
A general view of the First National Studios at Burbank, Cal., taken from the air shortly after completion

Movie Industry

Big Timber Trusses Used in Construction of New First National Studios at Burbank, near Los Angeles, Put Up in Record Time

The photograph above shows one of the 6-ton trusses made of Oregon pine and measuring 137 ft. in length

The lower picture shows the crane which placed the timber trusses at work



Placing Concrete Overhead

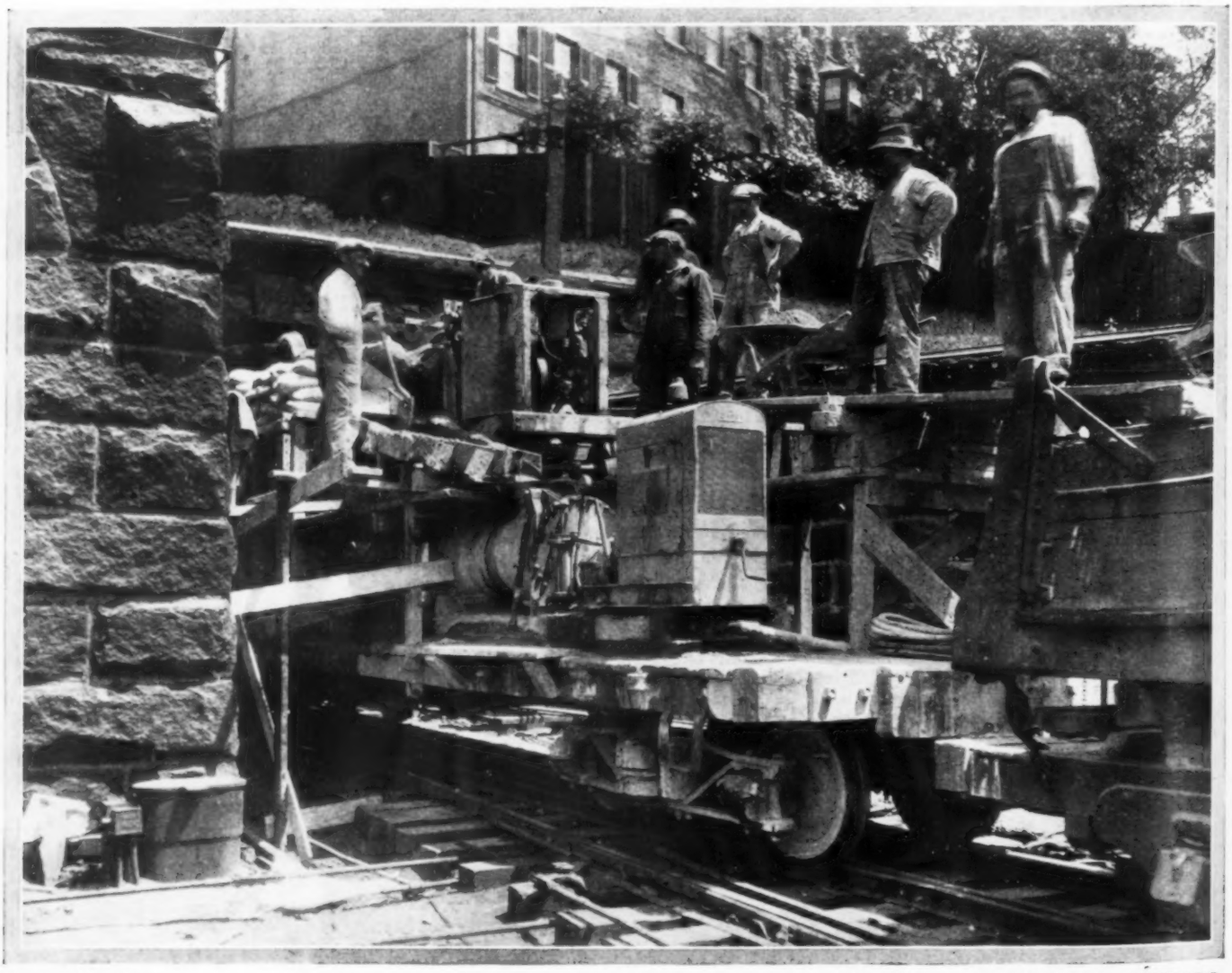
Pneumatic Method Speeds Work in Relining Narrow Tunnels

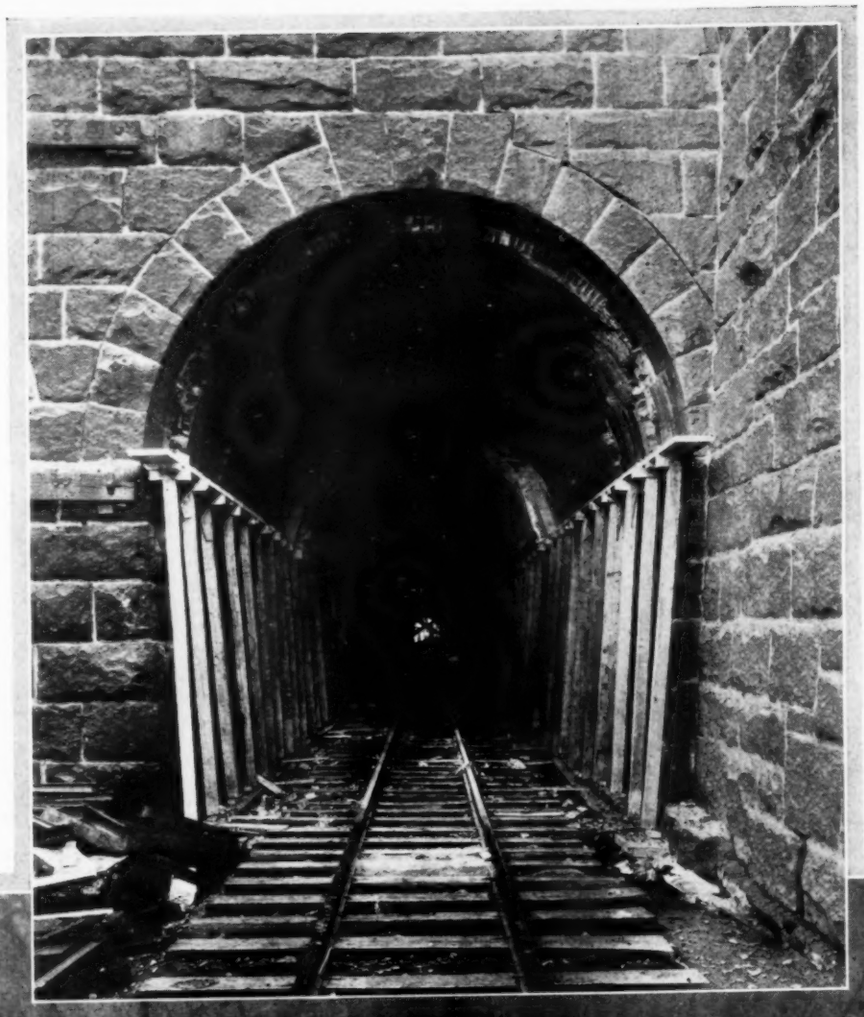
ANY sort of railroad construction that must be carried on without material interference with traffic always presents a difficult problem. Coleman Brothers of Boston recently encountered such a problem when they took a contract for the relining with concrete of some old masonry tunnels lined with brick on the route of the Boston, Revere & Lynn Railroad, a narrow-gage suburban line running to Revere Beach, one of Boston's leading shore resorts.

The specifications called for a concrete lining 6 in. thick in two tunnels, one of which was built in 1875, and the other in 1894. Because of the necessity of using equipment that could be hauled in and out of the tunnels at short notice, and the fact that the concrete was to be placed overhead, Coleman Brothers decided to use the pneumatic method of placing concrete. A Ransome pneumatic placer was mounted on a flat car which, with two carloads of sand and a double flat car of stone, made up the construction train. One tunnel at a time was relined, and the contractors were allotted the hours between 9:30 a.m. and 4:30 p.m. for the work. During these hours, all traffic on the railroad was handled by the other tunnel. The first group of hours each day were occupied in pulling out old forms and in placing new ones. Then the construction train was run into the tunnel and the placing of concrete began. The train usually remained in the tunnel until about 2 o'clock, when it was pulled out so that more form work could be done and the tunnel made ready for the heavy rush hour traffic. When the job was planned, it was expected that about 20 ft. a day would be the maximum run, but it soon proved possible to push the average up to about 30 ft. daily. This meant the placing of about 15 yd. of concrete. Reinforcing consisting of ¾-in. rods was used throughout the job. The speed with which the pneumatic placer worked made it possible to complete the job of relining both the tunnels in 36 pouring days. The use of Celite at the rate of 2 lb. per bag of cement also accelerated the work. A 1:2:4 mix was used.

The work was under the direction of Steven R. Burke, engineer of the Coleman Brothers' organization. Thomas Keenan was the engineer in charge for the railroad.

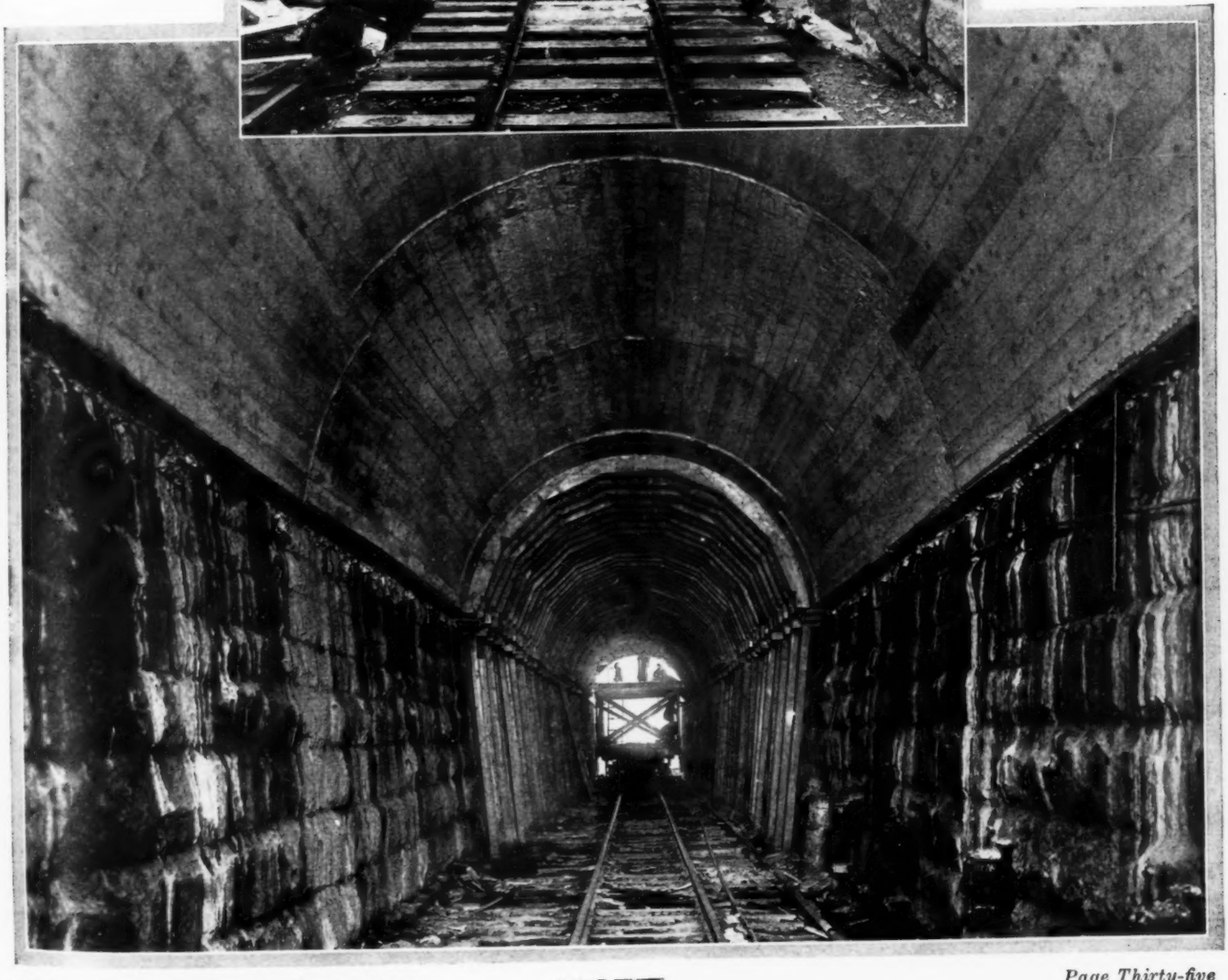
The construction train ready to enter the tunnel. The pneumatic placer is on the forward car which also carries the day's cement supply. Sand and stone are brought from the rear cars in wheelbarrows





At the right—Looking into one of the tunnels showing timber supports for the forms in place with the old brick lining above

Below—Form work in progress inside the tunnel. This photograph also shows some of the concrete placed by the pneumatic method



New Equipment on the Job

An Improved Steam Shovel

The new steam shovel known as the Type 7 has recently been put on the market by the Marion Steam Shovel Company of Marion, Ohio. The accompanying photograph shows one of the new shovels in operation loading a motor truck.

New Cranes Handle Heavier Loads

A larger unit is now being manufactured by the Universal Crane Company of Cleveland, Ohio, which for several years has been manufacturing 5-ton cranes suitable for mounting on motor trucks. The new units, known as the 6 and 7½-ton cranes, are like the 5-ton cranes in appearance and size. The only real difference is that they can reach out further and lift a heavier weight. They are rated as having a lifting power of 12,000 and 15,000 lb. respectively at a 10-ft. radius.

Stone Spreader for Road Work

The machine shown in the accompanying photograph is known as the Reliance Chip and Sand Spreader and has recently been put on the market by the Universal Road Machinery Company of Kingston, N. Y. This photograph was taken on the Ashokan Boulevard which is where the spreader was working on a resurfacing job for the City of New York.

Machine Heats Asphalt on Pavement

A new machine designed to facilitate the handling of asphalt is being manufactured by the Good Roads Equipment Corporation of Philadelphia. It is known as the Greco Junior D Pavement superheater. The accompanying photograph was taken in Cincinnati where the superheater has been resurfacing both wood and granite block streets with asphalt.

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